Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

JUNE, 1941

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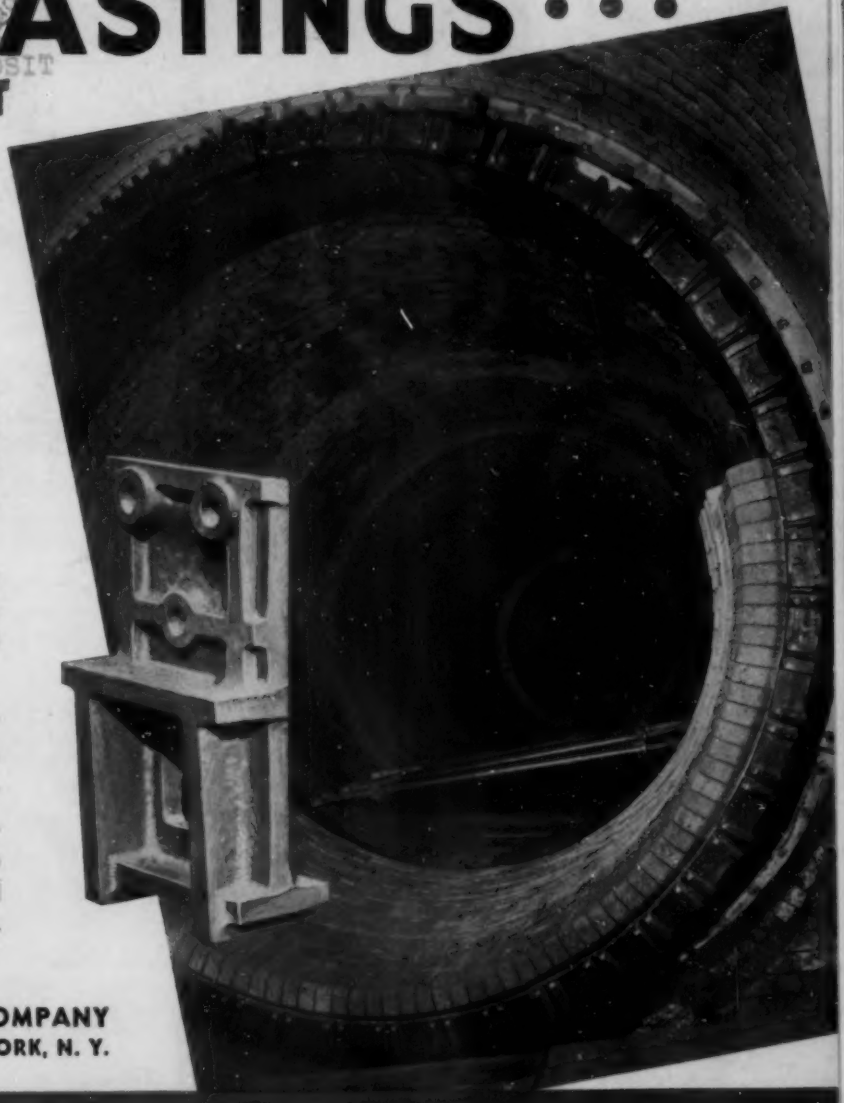
B&W CASTINGS . . .

HEAT-RESISTANT
ELVERITE
ADAMANTINE



Specially designed heat-resistant nose ring castings, fitted in the firing end of a rotary kiln at the Bath, Pa. plant of the Keystone Portland Cement Co., Philadelphia.

Other heat-resistant castings made by B&W include kiln flights, tail rings, chutes, cooler lifters, feed pipes, seal rings, etc.

Specify Elverite for wear resistance—for grinding rings, tube mill linings, crusher parts, rolls, conveyor parts, etc.

Adamantine, a superior grade of manganese-chromium steel is used where abrasion-resistance, great strength, and machinability are desired. Can be supplied cast or forged.

THE BABCOCK & WILCOX COMPANY
85 LIBERTY STREET . . NEW YORK, N. Y.
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BABCOCK & WILCOX

LUDLOW-SAYLOR

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

●

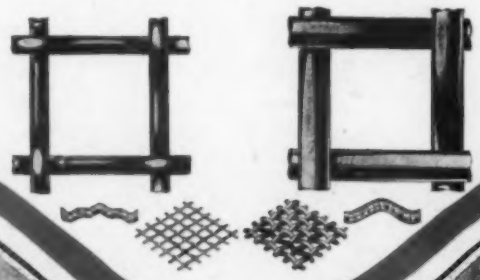
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

withstand abrasion longer—

endure vibration better—

resist fatigue to the utmost



The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare Arch-Crimp Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS

DUST

is a problem

IN INDUSTRY, TOO

DUST . . . dust . . . dust! The word itself suggests work for the housewife. And dust is not confined to homes alone. Industry, too, has its dust problems.

Whether your problem is one of collecting dust to minimize a nuisance or collecting dust for the value of the material collected, you'll find at American Blower just the type of equipment to do your job, and just the kind of experience that will be most helpful to you.

Take the American Blower Type "D" Centrifugal Collector, for example. It's a time-proved product that's been successfully applied in plants manufacturing food products, cement, soap, fertilizer, chemicals, asphalt, as well as in industries where sintering, grinding, smelting, blast furnace and foundry dust are a problem.

Phone the nearest American Blower Branch Office or write today for a list of complete installations in industries similar to yours, and our descriptive Bulletin No. 3424.

Remember . . . *Bad air is bad business!*

American Blower Type "D" Centrifugal Collector, above. The modern American Blower Dust Testing Laboratory is available to engineers and customers for testing and analyzing new or special dust samples, in considering American Blower dust collecting equipment for their problems.

ALSO ASK ABOUT OUR NEW CAPILLARY AIR WASHERS!

AMERICAN BLOWER

AMERICAN BLOWER CORPORATION, 6000 Russell Street, Detroit, Mich.
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO
Division of American Radiator and Standard Sanitary Corporation

DUST COLLECTORS • DUST PRECIPITATORS • FANS • BLOWERS • AIR WASHERS

JUN -9 1941

Rock Products

Recognized the World Over as the Leader in Its Field

With which has been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

VOL. 44, No. 6, JUNE, 1941

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YOU CAN BET YOUR BOTTOM DOLLAR ON EXCELLAY!

A WIRE ROPE ENGINEER REPORTS TO HIS BOSS

Boss — the operations out here make me dizzy! Gigantic, stupendous and colossal are just weak understatements when used to describe any phase of the work on the mighty Shasta Dam Project!

And American Tiger Brand Excellay is really doing a noble job by keeping important equipment running on schedule. When operators on a job like this say, "That's good rope," you can bet your bottom dollar they're not making any idle statement!

This picture is a honey — shows the boom of an electric shovel whose dipper loads 6 tons of material at one scoop, and in the background is the 460-foot high head tower which supports the 7 long cableways that deliver concrete to the forms.

By the way, the head tower is 25 feet taller than a 31-story building!

al

A GOOD way to get good service out of your wire rope is to take full advantage of the wide experiences of American Tiger Brand Wire Rope Engineers. Our field engineers are interested in seeing that you get a full dollar's value out of every dollar you invest in wire rope. That's why you'll find them right out where the rope is used—that's where they spend most of their time. There's no better place to keep in touch with wire rope performance.

These engineers are well qualified to give you exactly the service you need—speedily, too! Besides helping you to select the most practical wire rope for a particular job, they can often give you valuable, money-saving tips on operation. And there's no obligation.

American Tiger Brand Wire Rope is made in all constructions and grades. Call on one of our engineers to help you specify the types best suited for your job.

EXCELLAY *Preformed* **WIRE ROPE**

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York

UNITED STATES STEEL

TO CUT ROPE COST...

KEEP YOUR EYE ON THE ROEBLING "4"

The Roebling "4" combine to give you the one thing above all that counts in wire rope service. And that is — utmost *overall* rope safety and minimum *general average* rope operating cost — economy based on your ropes *as a whole.*

ROEBLING
"Blue Center"
STEEL
WIRE ROPE

WIRE ROPE HIDES NO SECRETS HERE!

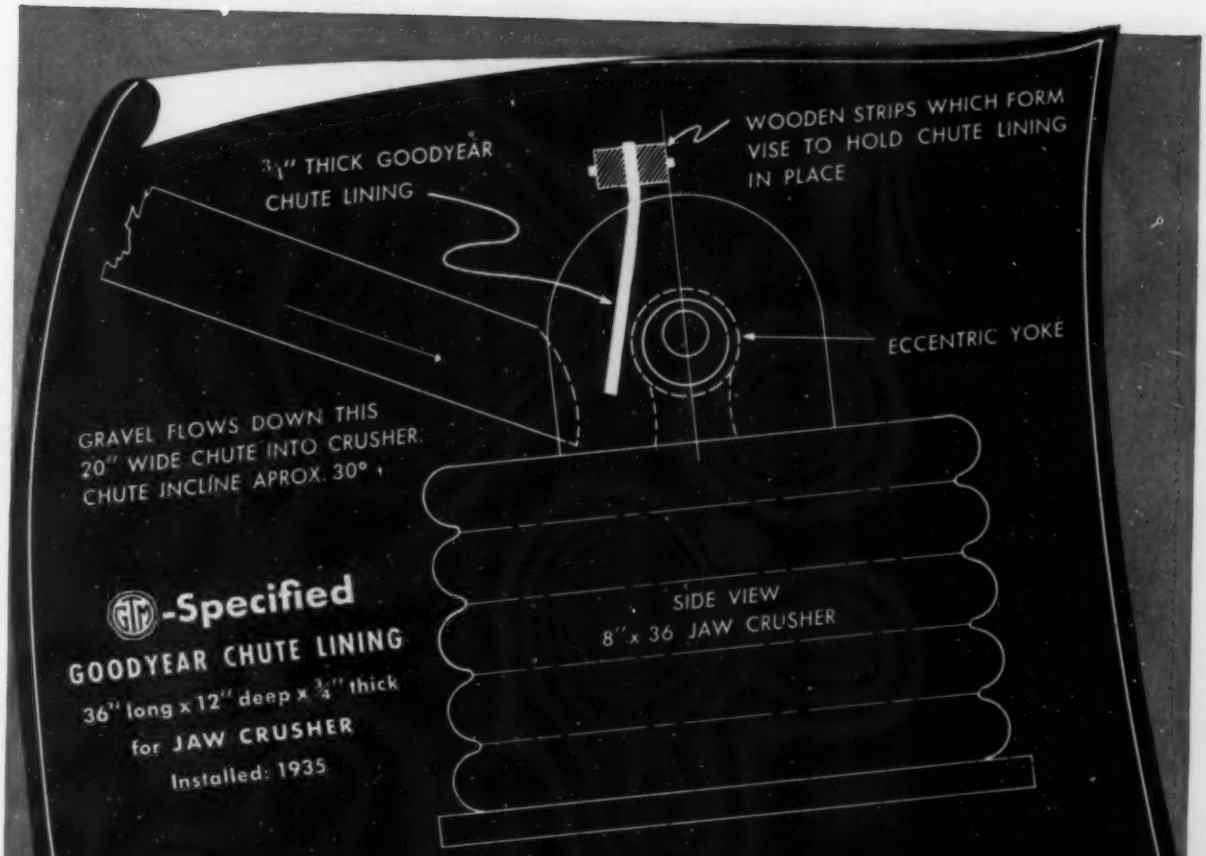
This wire rope fatigue machine is an outstanding example of Roebling's aggressive research and exceptional facilities.

It is the largest and most highly developed wire rope fatigue machine in existence, designed by Roebling for use in studying rope characteristics. With this machine is carried on a never-ending search into the wearing and fatigue qualities of wire rope under various bending and tension conditions.

ROEBLING 1841 1941 100th ANNIVERSARY

JOHN A. ROEBLING'S SONS COMPANY TRENTON NEW JERSEY

Branches in Principal Cities Export Division: 19 Rector St. New York, N.Y., U.S.A. Cable Address: "Roebling's" New York


3/4" THICK GOODYEAR CHUTE LINING
WOODEN STRIPS WHICH FORM VISE TO HOLD CHUTE LINING IN PLACE
ECCENTRIC YOKE
GRAVEL FLOWS DOWN THIS 20" WIDE CHUTE INTO CRUSHER. CHUTE INCLINE APROX. 30°
SIDE VIEW
8" x 36 JAW CRUSHER
GTM-Specified
GOODYEAR CHUTE LINING
36" long x 12" deep x 3/4" thick
for JAW CRUSHER
Installed: 1935

IT'S BEEN HOLDING UP A *Rock Slide* FOR SIX YEARS!

To protect the eccentric yoke in its jaw crusher from the impact of tons of rock, a West Coast sand and gravel company was using baffle plates made of ½" vanadium steel. But so great was the abrasion, these heavy metal plates wore out in six to seven weeks. Result was frequent shutdowns for replacement.

Then, in 1935, the management turned to the G.T.M. – Goodyear Technical Man. He recommended replacing the baffle with a sheet of Goodyear Rubber Chute Lining ¾" thick. Today, six years later, this same rubber guard is still doing a fine job. It has already lasted about forty-five times as long as the highest-quality vanadium plate —and looks tough and durable enough to stand a few more years of this brutal service.

Goodyear Chute Lining is made of the most abrasion-resistant rubber it is possible to compound. In handling crushed rock, ores and coal it adds years to equipment life. Why not ask the G.T.M. to apply the advantages of Goodyear Chute Lining to your abrasion problem? To bring him to your office, write: Goodyear, Akron, Ohio or Los Angeles, California – or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

THE GREATEST NAME IN RUBBER
GOODYEAR

"We speed up our job with Gulf Quality Lubricants"

*. . . says this contractor**

On-the-job photo of a Gulf engineer (*left*) discussing lubrication of earth-moving equipment with construction superintendent.

* * *

*Laub & Collins, General Contractors, are relocating a section of Route 22 (William Penn Highway) near Wilkinsburg, Pa. Gulf lubricants are helping to protect their modern equipment 16 hours a day.

"By following the Gulf Engineer's recommendations we get dependable, efficient performance from all our machines"

"WHEN we started this job we insured as well as possible against delays caused by mechanical troubles—we standardized on Gulf quality lubricants," says this contractor. "The extra hours of trouble-free service we gain are playing an important part in keeping us ahead of contract schedule."

Call in a Gulf engineer before you start *your* next job—he can help you finish it more quickly and with a bigger profit. No matter where your job is located, you can quickly secure Gulf quality lubricants from one of the more than 1200 warehouses in 30 states from Maine to New Mexico. Phone or write your nearest Gulf office today.

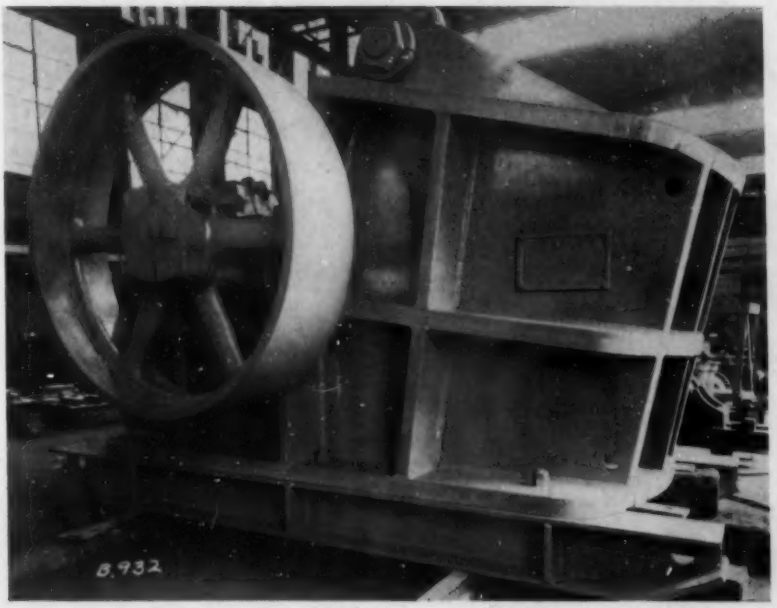
GULF INDUSTRIAL LUBRICATION

GULF OIL CORPORATION • GULF REFINING COMPANY

GULF BUILDING · PITTSBURGH, PA.

IT FILLS THE BILL

like it fills this photo



TRAYLOR

TYPE H BLAKE CRUSHER

WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

Welded or Riveted Stacks, Tanks and Bins for any purpose.

The photo shows a new and larger size of the Traylor Type H Blake Jaw Crusher,—a 30" x 42", mounted on special steel skids, snapped by our photographer, before being shipped out on a hurry-up order, which illustrates the truth of Bobby Burns' saying about the "plans of mice and men," because the Type H was planned originally to afford the smaller operator a primary crusher of stronger design, higher capacity and greater all-around efficiency than was previously available for him.

It proved to be too good, however, to be limited to a particular field, (up to 24" x 36"), and therefore this larger machine was demanded, which, while not really big, as primary crushers go, is nevertheless suitable for a sizeable plant, with its close to 300 tons hourly capacity. We may add that a 36" x 42" has been designed and will be available shortly.

The marked popularity of the Traylor Type H Blake Jaw Crusher is due to sound reasons. First, there can be no stronger crusher frame built than one of welded steel plate, which also eliminates excess weight. When to this are added general simplicity of design, and Traylor patented Curved Jaw Plates, which cut unit costs to the minimum, it is no wonder at all that this modern crusher has such great appeal to operators. Investigate it closely for your own benefit.

GET OUR BULLETIN 1105

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"It's a Lot of Shovels All in One"!

Check over the things you like about any power shovel—the reasons why you'd buy it—you'll find the things you like about each one brought together in one shovel—the Buckeye Clipper, with the plus value of Vacuum Control.

No shovel in its range today offers as much as Buckeye's preference points—you'd have to own a dozen other shovels to get them all, but they're all in the Clipper and all the accepted practices of shovel construction besides: alloy steel stress parts, safety glass in cab, complete metallurgical laboratory control of molded, forged and pressed parts.

Some shovels give you one or a couple of these design and operating advantages—Clipper gives you all and 16 others besides—no wonder the swing is to Clippers, the original vacuum power control shovel!

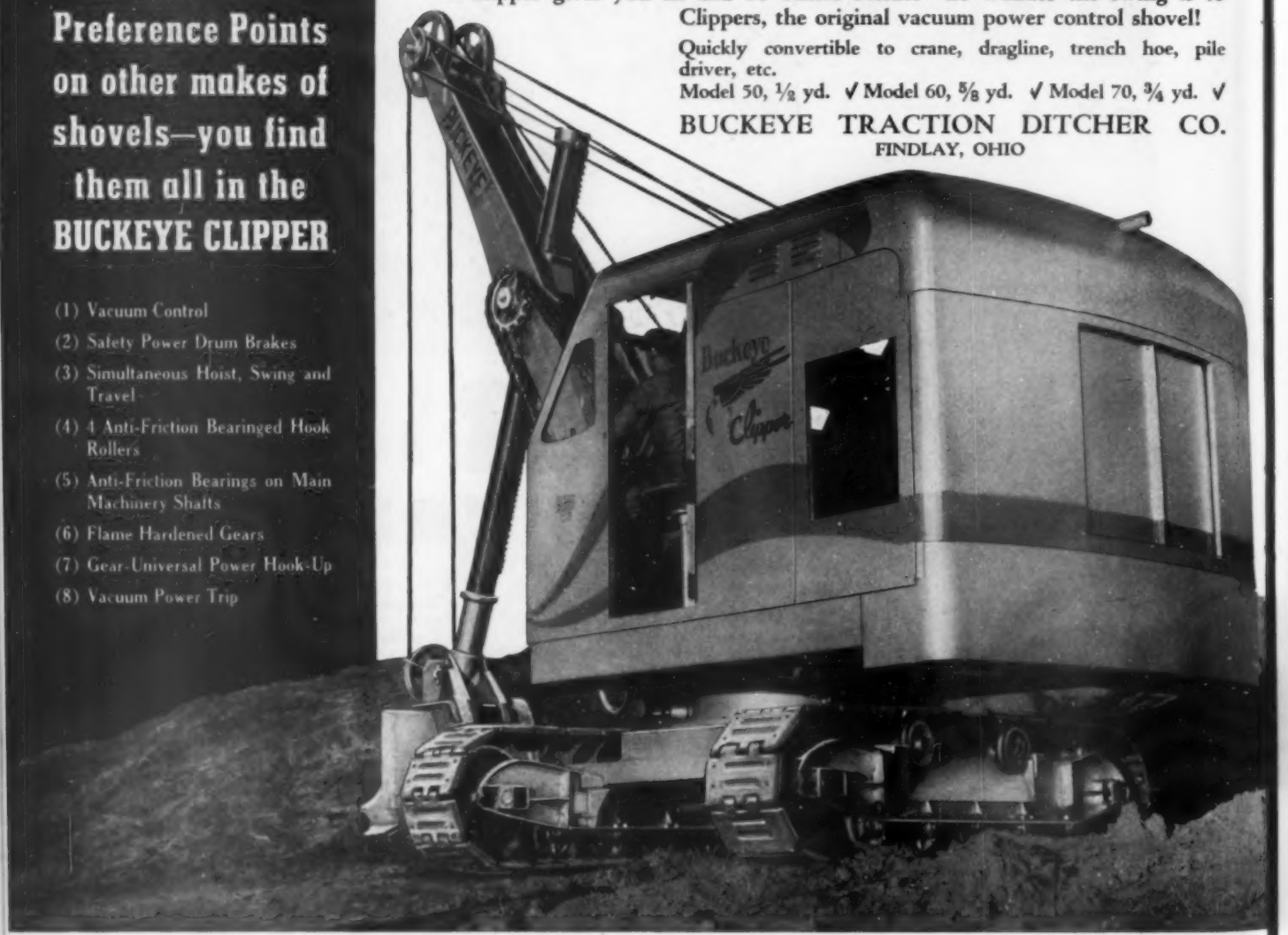
Quickly convertible to crane, dragline, trench hoe, pile driver, etc.

Model 50, ½ yd. ✓ Model 60, ⅝ yd. ✓ Model 70, ¾ yd. ✓

BUCKEYE TRACTION DITCHER CO.
FINDLAY, OHIO

Pick Your Preference Points on other makes of shovels—you find them all in the BUCKEYE CLIPPER

(1) Vacuum Control
(2) Safety Power Drum Brakes
(3) Simultaneous Hoist, Swing and Travel
(4) 4 Anti-Friction Bearinged Hook Rollers
(5) Anti-Friction Bearings on Main Machinery Shafts
(6) Flame Hardened Gears
(7) Gear-Universal Power Hook-Up
(8) Vacuum Power Trip



Built by Buckeye ✓

Convertible Shovels

Trenchers

Tractor Equipment

R-B Finegraders

Road Wideners

Spreaders

COUNSEL *for* DEFENSE

EWING GALLOWAY

FREE IDEAS for speed-ups and short-cuts

Because our plant at Easton is working against an abnormal backlog of direct and indirect defense work our sales engineers have a large amount of spare time to give you. Here, at your service, is an engineering staff with a fine performance record in material handling.

Now, when so much must be done in so little time, this proved engineering talent can help you find ways toward instant savings, speed-ups, short-cuts. These men can draw on experience to give you useful ideas on storage, handling methods and safety angles. They can help you to get more and better results from equipment which you are now using. When Easton is unable to meet an urgent order, these men with their encyclopedic knowledge of the field can help you to locate serviceable equipment quickly.

Easton sales engineers have put behind them many years of practical first-hand contact with the toughest problems involving the movement of materials. They are progressive, modern, top-flight handling experts. They want you to regard them as a unit of your Counsel for Defense. Call on them freely for advice concerning increased handling efficiency in factories, terminals, quarries, mines and construction work.

FREE COUNSEL is their contribution to America's Defense Program. You will owe them nothing for it. Write to Engineering Service, Easton Car & Construction Company, Easton, Pa.

A TYPICAL EASTON SALES ENGINEER . . .

with an average of over twenty years of practical experience, is thoroughly familiar with the design and application of the following types of equipment:

INDUSTRIAL CARS
for hand or locomotive haul, or electric

INDUSTRIAL TRAILERS AND SEMI-TRAILERS
for hand, tractor or motor-truck haul

ELECTRIC TRUCKS
load-carriers, low-lifts and tier-lifts

DUMP BODIES
for cars, trucks and trailers

ACCESSORY EQUIPMENT
turntables, track, skids, hoists

Payloads from 1 to 250 tons. Custom-built or standard types of equipment.

EASTON

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

"Just Like Grinding Coffee"!

4 Models—5 to 20 tons of lime dust per hour—Stationary and Portable Units. The plant at left is one of many using dependable, profit-proved Universal Pulverizers. A Universal Jaw Crusher with 10"x20" feed opening reduces the limestone to approximately 2½" size, part of the screened output being chuted to a No. 1 Pulverizer for final reduction. Average lime dust production is 50 to 75 tons per day.

. . "when you pulverize limestone with a Universal Pulverizer," *writes a user . . .*

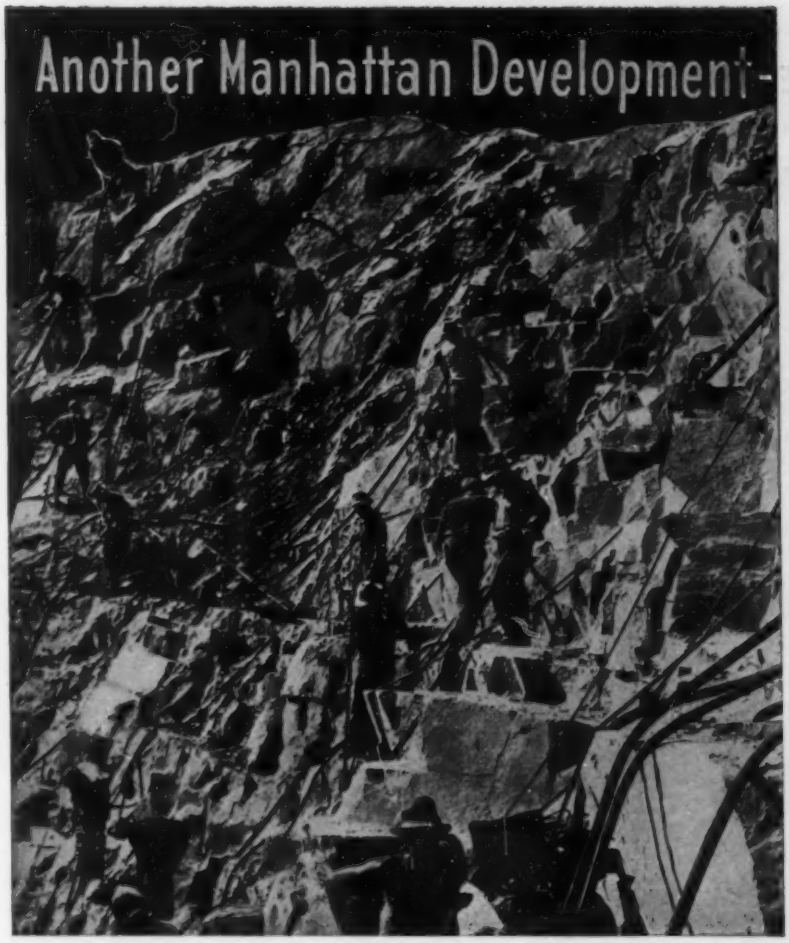
Yes sir, those tough manganese steel hammers whir around, reducing even the toughest stone in jig time. Better design and construction—that's the answer. Super non-heating, dust-sealed, self-aligning bearings, one fixed and one floating on each side, eliminate bearing troubles common to most pulverizers; a tough alloy steel housing that'll stand a long time of scuffing; wear-resistant, readily replaceable liners; reversible hammers that can be quickly changed to handle hard or soft rock; quickly adjusted grate bars; and other features that give you greater tonnage — lower maintenance cost — more profits — whether you're making agricultural lime, chips or road rock.

Let us tell you what satisfied users of Universal Pulverizers all over the country have to say about them! Send for Bulletin No. 55.

UNIVERSAL CRUSHER COMPANY
617 C Avenue West, Cedar Rapids, Iowa

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS



Condor Homo-Flex HOSE

EASY TO HANDLE
LIGHT . . . . .
STRONG . . . . .
KINKLESS . . .

HERE is the most outstanding development in hose construction in years—unusual strength and long life with extreme lightness; flexible as a rope, yet tough and kinkless.

The radical departures in design and construction are the outgrowth of engineering research into the causes of hose failure and of requirements to offset these.

Results of the first service tests were so far beyond expectancy that Condor Homo-Flex was introduced in a limited way under conditions chosen for severity of service and watched closely during a long probationary period. This fully confirmed early tests.

Condor Homo-Flex is made in several types for air, water, high-pressure spray, air-oil, oil spray, and high-pressure orchard spray service.

It's too much of a story for this space, so send for important Bulletin No. 6879.

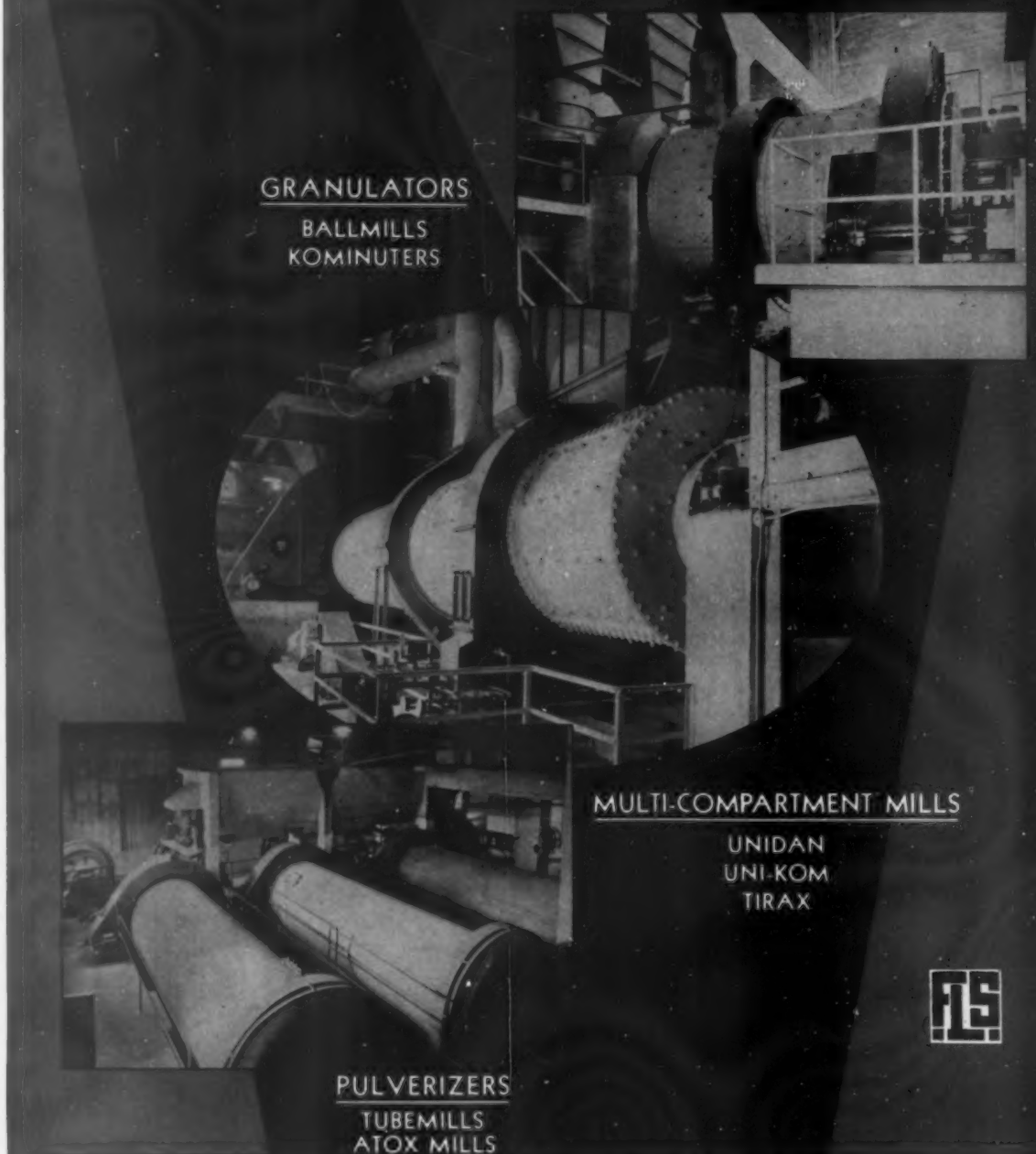
9 Homo-Flex ADVANTAGES

1 Extreme flexibility—easy to handle
2 Light in weight
3 Practically inseparable cover and plies—balanced homogeneous construction
4 Withstands high pressures and surges with wide margins of safety
5 Uniform inside and outside diameters
6 Less elongation and expansion
7 Less fatigue to operator
8 More production
9 Lower ultimate cost

KEEP AHEAD WITH MANHATTAN

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
111 Townsend Street • Passaic, New Jersey
Birmingham Chicago Cleveland New Orleans New York Boston
Minneapolis Detroit Pittsburgh Philadelphia St. Louis San Francisco

GRINDING MILLS



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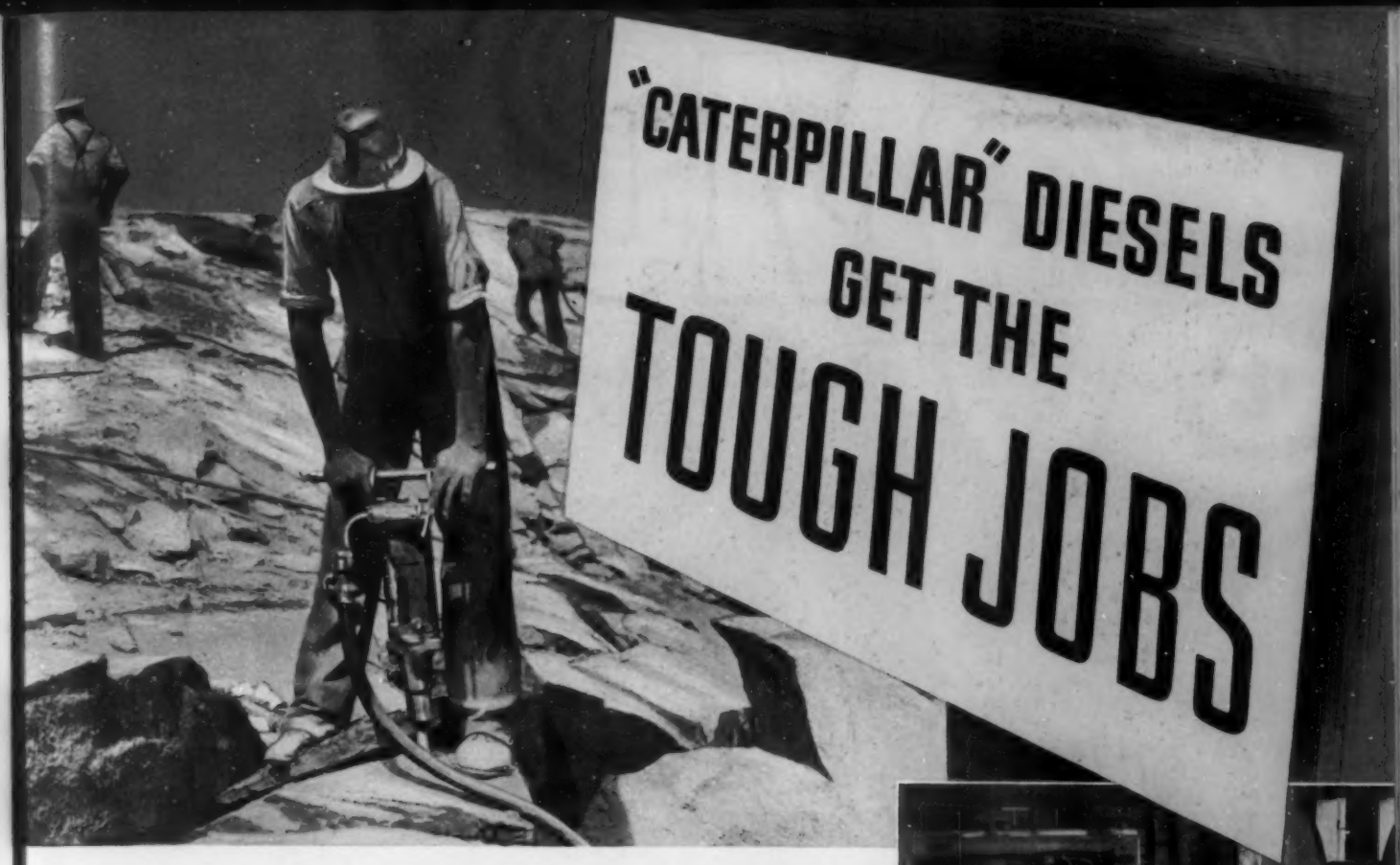


"CATERPILLAR" DIESELS GET THE TOUGH JOBS

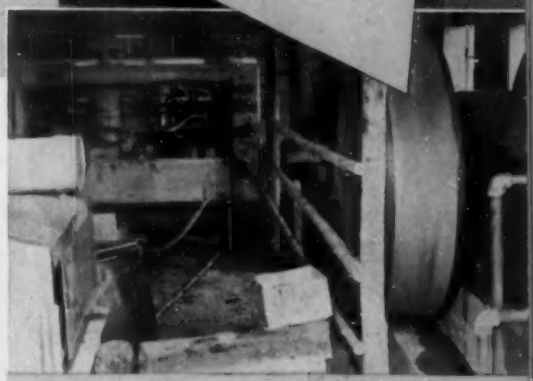
THAT'S because these compact, rugged, powerful engines can "take it"! They'll put up with punishment that would send many a less carefully built engine into an early repair or overhaul bill. Dependable power for the tough jobs—that's "Caterpillar" Diesel!

That's why these engines are the constantly increasing choice of pit-and-quarry men. R. F. Hedrick, of Siler City, N. C., is one of them. With a "Caterpillar" D13000 he reports crushing hard granite at a *fuel cost of less than 1 cent a ton.* With another D13000 he drives an Ingersoll-Rand 14x12 compressor.

Each engine uses only 3½ to 4 gallons of 7¼-cent fuel per hour during a 10-hour day. With the exclusive "Caterpillar" fuel system, you don't need premium fuels but can burn such extra-cheap, low grades as No. 2 and No. 3 domestic burner oils.

There are many other features about "Caterpillar" Diesel Engines—toward low maintenance, operating simplicity, dependable performance and long serviceable life. But their outstanding ECONOMY alone should be sufficient reason for heading at once toward your "Caterpillar" dealer for further information. Or, write us direct for literature giving experience of other operators in your field.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS



• Mr. Hedrick's compressor power—for supplying air for drill, 3 jack hammers, a bit sharpener and 2 forges. Compresses 550 cu. ft. of air per minute on about 30c worth of fuel an hour.

• Mr. Hedrick's crusher power—for two crushers, 3-deck screen, bucket elevator and conveyor. Average output, 300 tons per 10-hour day.

CATERPILLAR DIESEL

ENGINES AND ELECTRIC SETS • TRACK-TYPE TRACTORS • ROAD MACHINERY

The Cedarapids MOROK

The New Super-Quarry Crushing Plant*

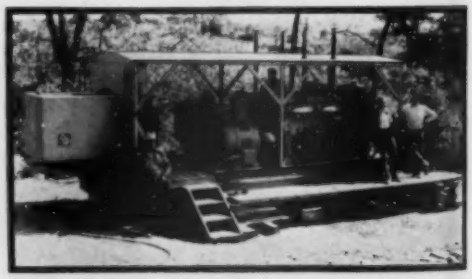
*MEETS THE DEMAND FOR BIGGER CAP
EASY PORTABILITY... LOWER PRODUCTI

The Cedarapids "Morok", the only plant of its kind in the industry today, meets the demand for big tonnage at low cost. Large construction projects requiring thousands of tons of aggregate must have material without delay. In one operation, from quarried rock to delivery trucks, the Cedarapids "Morok" delivers crushed, screened and graded aggregate at from 150 to 200 tons per hour.

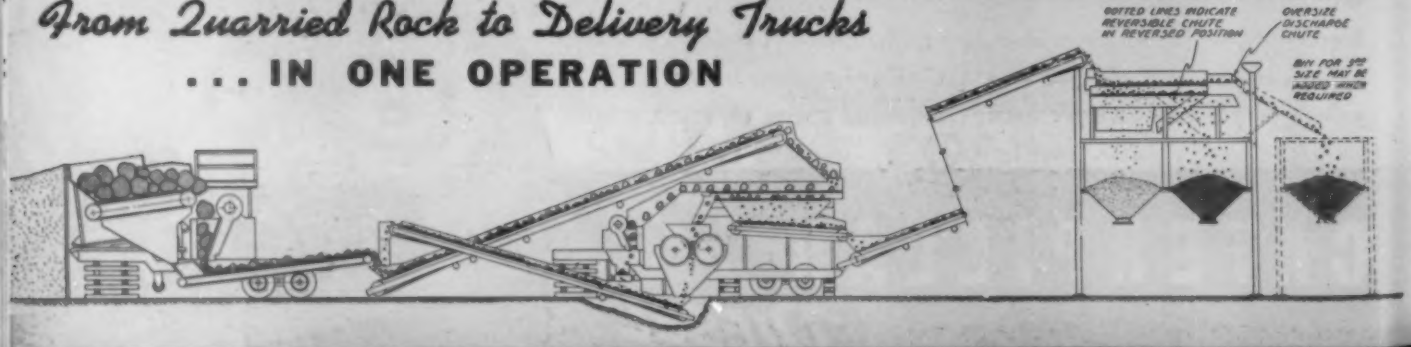
The Cedarapids "Morok" is completely portable. Each unit is mounted on its own tractor-trailer ready to be pulled to the job. Setting-up and dismantling time is reduced to the minimum.

Your Only Competitor Is Another "Morok" Owner!

ALL ELECTRIC



From Quarried Rock to Delivery Trucks
... IN ONE OPERATION


DOTTED LINES INDICATE REVERSIBLE CHUTE IN REVERSED POSITION
OVERSIZE DISCHARGE CHUTE
BIN FOR 3RD SIZE MAT BE ADDED WHEN REQUIRED

IOWA MANUFACTURING COMPANY

YOU CAN TAKE IT WITH YOU

When You Own a

Cedarapids MOROK

ACITY . .
ON COST

POWER

The Cedarapids "Morok" may be powered by separate electric motors for each crusher screen and conveyor. Electricity may be provided by special generator or from high lines. Switches may be mounted on one panel for centralized control.

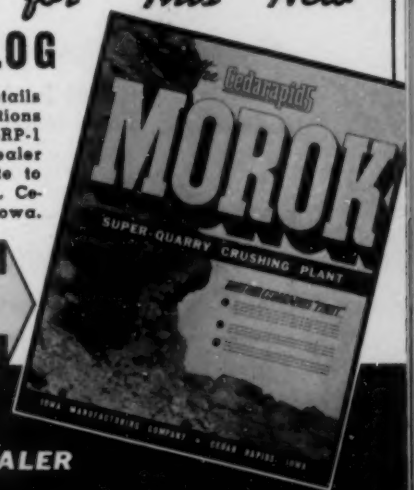
OR DIESEL PLUS ELECTRIC

An alternate power set-up is a combination of separate diesel motors for the primary crusher and the secondary crushers with electric motors for screens and conveyors. A small generator furnishes electricity for these motors.

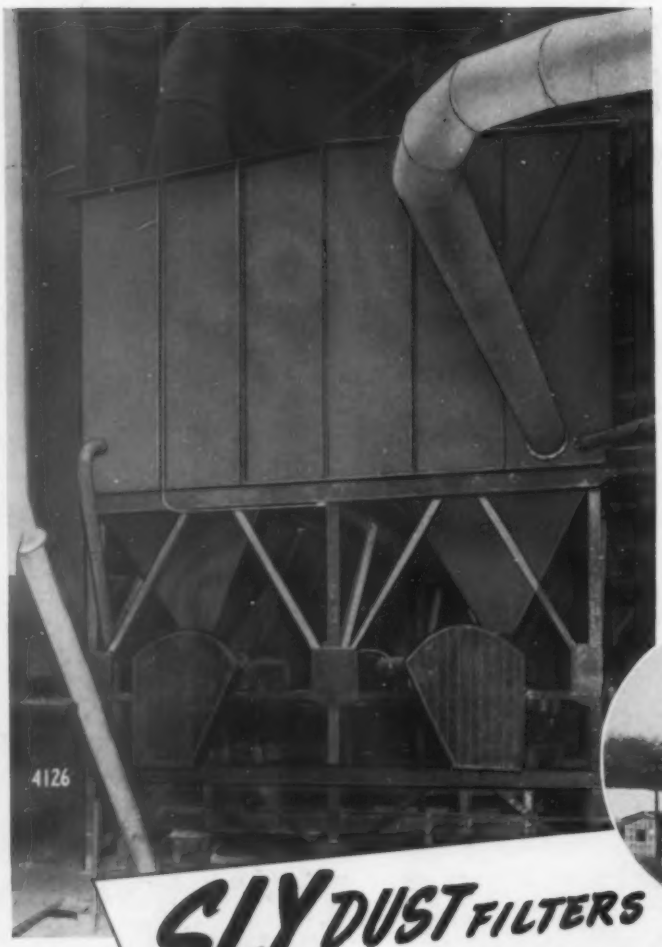
Send for This New

CATALOG

For further details and specifications get bulletin SRP-1 from your dealer today or write to Iowa Mfg. Co., Cedar Rapids, Iowa.



Cedar Rapids, Iowa . . SEE YOUR CEDARAPIDS DEALER



• There are three Sly Dust Filters in use in this plant. The one shown at left filters the fines out of 41,000 cu. ft. of air per minute, exhausting crushers, grinders, magnetic separators, screens and conveyors. The collected fines are conveyed continuously from the filter hoppers to two 75-ton storage tanks.

• Processing plant of the American Nepheline Corp., Rochester, N. Y.

SLY DUST FILTERS GAVE THE AMERICAN NEPHELINE CORP. THESE *Exclusive* ADVANTAGES

1 ***More Filtering Cloth.*** Sly gives many more square feet of *effective* filter cloth area, hence greater filtering capacity per cubic foot of space.

2 ***Taut Bags.*** This patented feature insures: (1) a constant *minimum* resistance to the air, and (2) quick, thorough dust removal since the *entire* bag is vibrated *uniformly* during shaking.

3 ***Simpler Shaker Mechanism.*** Consists of many less moving parts, resulting in less maintenance and lower costs.

4 ***Automatic Control.*** Sly gives *any degree of automatic control* up to *complete* automatic; minimizing or even removing entirely the human factor.

5 ***Bags More Easily Replaced.*** Although Sly filter bags last a long time, when the bags do need replacing any individual worn bag can be readily replaced without disturbing the others.

•

These dust filters at the American Nepheline Corp. were originally installed to cope with a dust nuisance, but it was soon found that the fine product had a very profitable sales value. Ask for Bulletin 98 and tell us about *your* problem so that we can write you fully.

THE W. W. SLY MANUFACTURING CO.

Branch Offices in Principal Cities

4746 Train Ave., Cleveland, Ohio

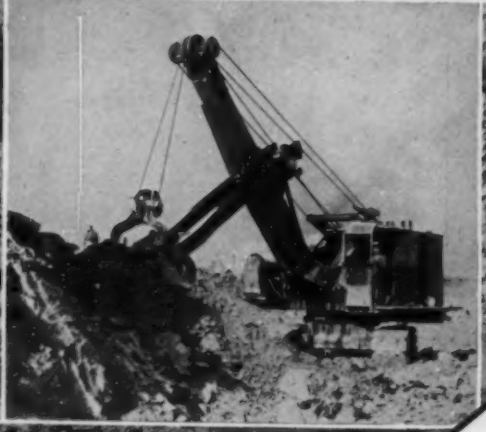
SLY
INDUSTRIAL DUST CONTROL

Put Any MARION In Rock

To meet the "rockiest" kind of digging conditions, a power shovel must be built accordingly. The reason a MARION is recognized as a full fledged "rock machine" is because it has definitely been engineered, designed, constructed and powered with this kind of tough service in mind. The same consideration has been given every MARION in the line . . . from ¾ cu. yd. to 35 cu. yds. Let a MARION make short work of your rock digging requirements.

Write for bulletin.

THE MARION STEAM SHOVEL CO.
MARION, OHIO, U. S. A.



Modernize with
MARION
Shovels • Draglines • Cranes
Pull-Shovels • Clamshells
Walkers • from
¾ cu. yd. to 35 cu. yds. Gasoline
Diesel • Electric

"Bethlehem stone-sawing strand cut our costs 30%" *says general manager of large Tennessee quarry*

Here's what J. B. Jones, Jr., general manager of Grey Knox quarries, in Tennessee, has to say about Bethlehem Stone-Sawing strand:

"We have thoroughly tested Bethlehem Stone-Sawing strand on our various properties, and on the basis of the results have adopted it for exclusive use. Bethlehem strand is easier to handle. This strand is less liable to kink—and, if a kink does occur, it can be satisfactorily straightened out. Bethlehem strand wears more uniformly, lasts longer than other brands we have used. Everything considered, Bethlehem Stone-Sawing strand has cut our strand costs at least 30 per cent."

If you use Stone-Sawing strand, why not consider Bethlehem as your source of supply. Bethlehem strand is made of top-quality steel, and is turning in remarkable performances in quarries everywhere. It's a real time and money saver.

BETHLEHEM STEEL COMPANY

THIS BOOK TELLS...

What dust is...

in terms of both theory and practice in industry.

Where dust originates...

in the many operations of industry, such as crushing, combustion, drying, grinding, mining, powdering, roasting, sand blasting and many others.

Why dust control is important...

in terms of valuable dust that may be reclaimed and reworked, and in the elimination of hazards and hindrances to production.

How Buell Dust Collectors can help your business...

through the high collection efficiency of the van Tongeren System (exclusive with Buell) and the low cost of both installation and operation.

Who buys Buell equipment...

the great names among America's industrial leaders who have bought *—and re-ordered—*Buell Dust Collectors for a wide range of uses.

buell
DUST COLLECTORS

Your copy of "Dust In Industry" will be sent upon request, without obligation. Have your secretary ask for Bulletin R-6.

BUELL ENGINEERING CO., INC.
Suite 5000, 2 Cedar Street, New York

Nation-wide service through offices of either Buell Engineering Co. or B. F. Sturtevant Co.

SIMPLE FIGURES . . .

CEMENT PRODUCTION UP 40.83%
CEMENT SHIPMENTS UP 54.46%

Not in a decade has this industry approached its present production levels —a gain so swift that plants no longer are able to enjoy their mid-winter pause for rehabilitation.

Illustrate the MARKET *Covered by*

THE 1941 AUGUST CEMENT ISSUE

DON'T MISS IT!!

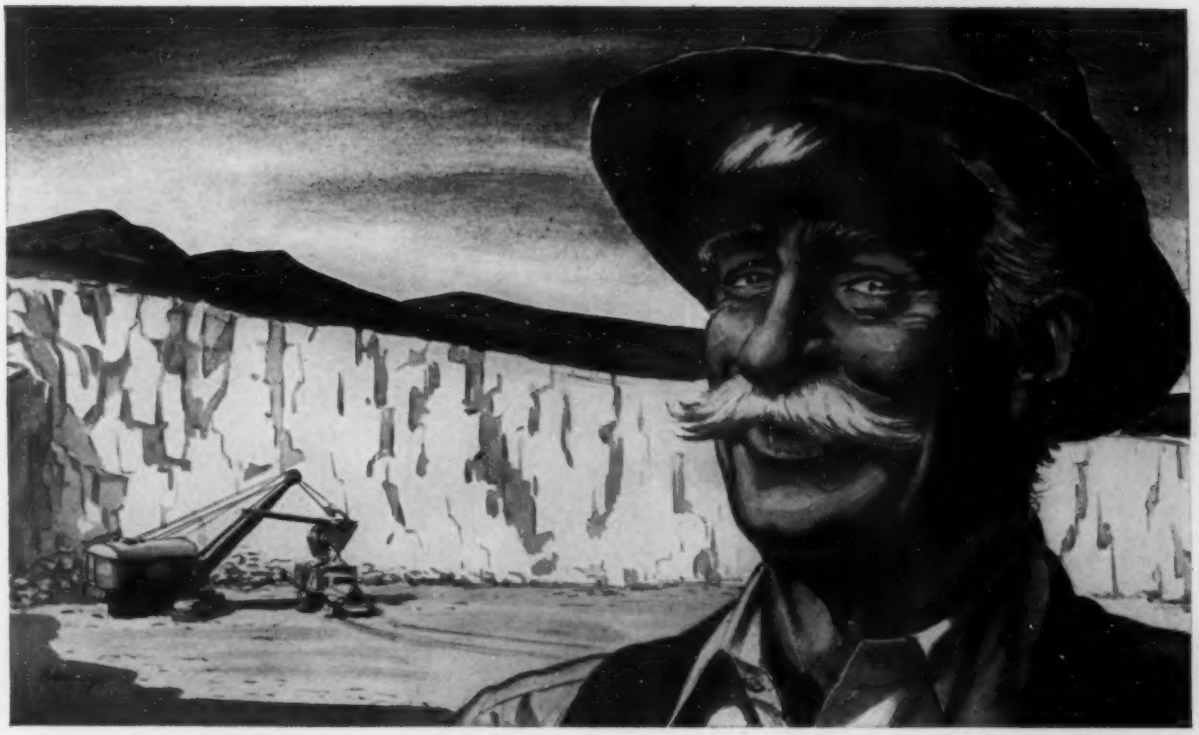
With such extreme pressure for production, experts no longer can tarry with inefficient, out-moded, or out-worn equipment or manufacturing operations. The progress they have made in bettering their position will be reported accurately and completely—in August—as a result of months of travel and research by ROCK PRODUCTS' engineer-editors.

TO EQUIPMENT MANUFACTURERS Your sales message will aid the "man in the saddle" in formulating his equipment purchasing plans. You too will profit. The industry knows the August Cement number, looks to it and values it. It offers you a genuine opportunity to reach this buying market through the media having unexcelled readership in it.

FOR BEST POSITION MAKE YOUR RESERVATION NOW . . . FORMS CLOSE JULY 20th

ROCK PRODUCTS

309 West Jackson Blvd. Chicago, Illinois



Joe tells why it costs less to quarry stone today

"QUARRYING SURE HAS IMPROVED. It's a good thing, too, or we'd never get out enough stone for all the new roads and the other construction for national defense.

"They tell me that powder costs alone have been cut 30% right here since the old days, and I can easily believe it. Just

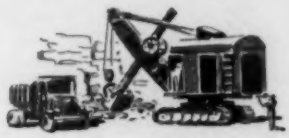
take the saving on secondary shooting. What with these new powders and new ways of shooting, the rock's most all laid down ready for the shovel.

"It wasn't like that when I first came on this job. The stone wasn't broken up so nice, and it was pretty tough on those old shovels trying to load that big stuff.

"It was the Hercules people that started the ball rolling to cut down costs and boost production. They were the first ones to introduce Hercomite*—you know, the powder with lots more sticks in a case. Folks couldn't get the notion at first. But now look at it. Hercomite's used in quarries all over the country and it cuts costs nearly a third in some places.

"Of course, they've been improving Hercomite all the time; and then Hercules brought out that Gelamite* that we could use in wet holes, which saved some more money. You can use wagon drills, well drills, or coyote holes. It doesn't make any difference whether you shoot every day or only once a year, there's a way to do it with one of these Hercomites or Gelamites that will break the stuff just the way you want it.

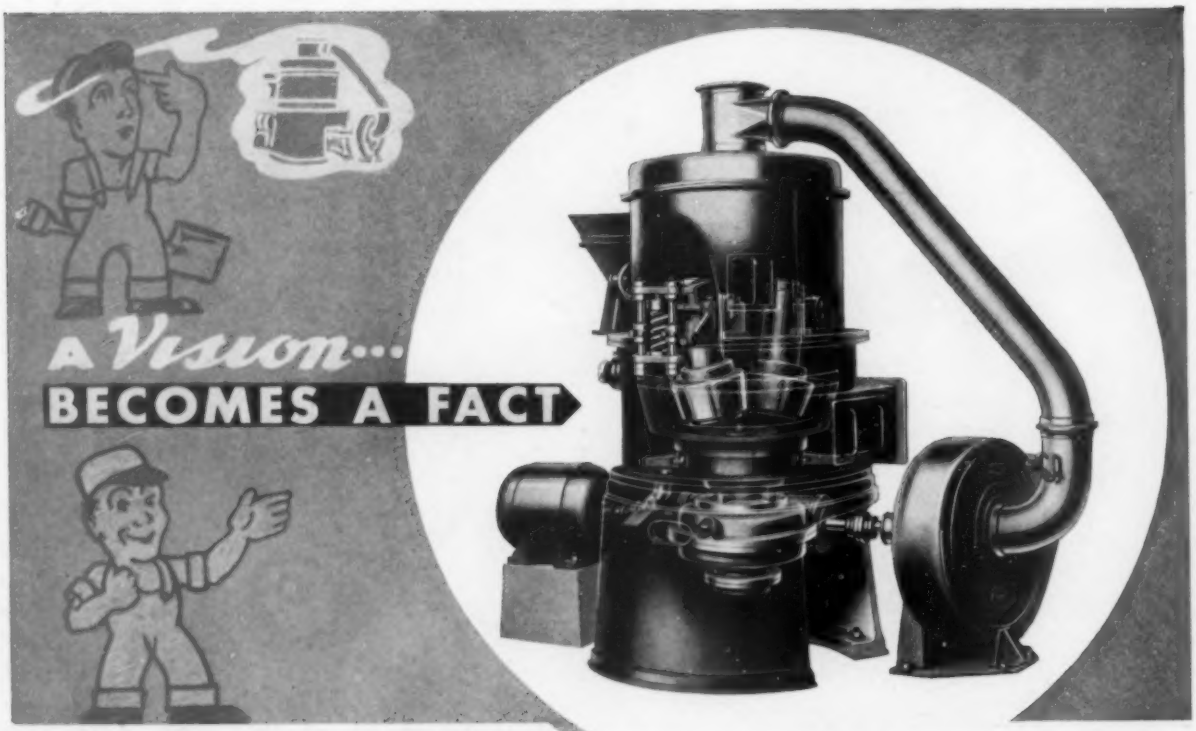
"Yes, sir, we do a better job around a quarry now, what with the big improvement in the explosives, shovels, drills, and transportation equipment, too; and I figure a lot of the credit belongs to Hercules and the Hercules service men. They got there first with these modern high-count powders, and with all the researching and improving they're doing it looks as if they aim to stay ahead."



HERCULES POWDER COMPANY
INCORPORATED
946 KING STREET, WILMINGTON, DELAWARE

*Reg. U. S. Pat. Off., by Hercules Powder Co.

D-13



RAYMOND BOWL MILL

What kiln operators have had in mind as the ideal firing unit becomes the "real thing" when the Bowl Mill is installed on rotary kilns.

It cuts coal preparation costs to new low figures . . . maintains a uniform fineness at all feed rates . . . boosts kiln capacity and improves production of lime and cement.

The popularity of the Bowl Mill among producers is shown by the greatest demand and sales records for Bowl Mills in the history of Raymond equipment . . . fully thirty per cent repeat orders.

BOWL MILL

with these . . . OPERATING FEATURES

Easy Control of Output—Mill capacity may be varied by small increments from minimum to maximum with practically constant fineness of grind.

Simple Fineness Adjustment—Classifier vanes of the separator, and adjustments of grinding rolls, are conveniently located outside the mill.

Positive Lubrication—To assure continuous operation at high efficiency, automatic oil circulation is provided to main bearings, and the gear mechanism runs in a bath of oil. Operating parts lubricated from outside the mill.

Quiet Operation—With no metal-to-metal contact between grinding surfaces, pounding and vibration are eliminated. Worm gear drive with ball bearings, and main shaft with roller bearings, make the mill practically noiseless.

Low Power Consumption—Tests show 25% or more in power savings due to extremely low friction losses and high pulverizing efficiency.

Thermostatic Control—Panel board includes all controls for pressure, draft and rate of feed. Provides visible graphic record of mill performance.

For performance data and construction details, ask for Catalog No. 43.

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1307 North Branch Street CHICAGO
Sales Offices in Principal Cities • • • In Canada: Combustion Engineering Corporation, Ltd., Montreal

Picture of a real Rock Shovel PAYING EXTRA DIVIDENDS!

Picking up a big one in the J. & L. Snouffer, Inc. Quarry, Dublin, Ohio.

THERE *is strength in that front end!* Note the huskiness of that boom—the Northwest All Welded Boom—and no Northwest All Welded Boom has ever failed! Note the cap casting at the upper end of the dipper sticks—they are tied together and work as a unit giving the sticks 50% greater resistance to twisting strains.

The independent action of the Northwest Dual Independent Crowd is going to slide that rock into the truck without delay and the dipper will go back up through the bank without stuttering —without the hesitation, the time loss and "second start" digging so often necessary to fill the dipper with the ordinary crowd. That's because the Northwest Dual Crowd utilizes force other shovels waste.

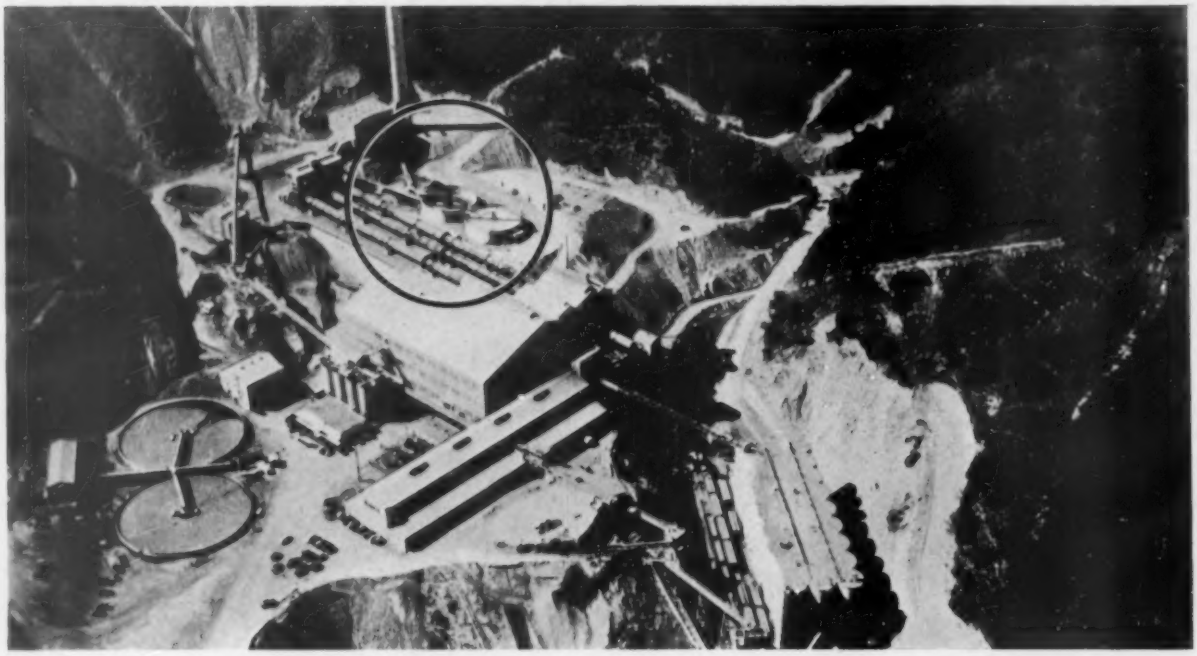
These are just a few of the features of Northwest design that make Northwest a *real* rock shovel —just a few of the advantages that have made Northwest the repeat order machine in the hands of real material movers.

NORTHWEST ENGINEERING COMPANY
1820 Steger Building • 28 East Jackson Boulevard • Chicago, Illinois

NORTHWEST

IF IT'S A REAL ROCK SHOVEL YOU'LL NEVER HAVE TO WORRY ABOUT OUTPUT IN DIRT!

NEW TYPE CEMENT PRODUCTION



AND THE NEW DORR SLURRY MIXER

PHOTO ABOVE

A 12,000 bbl. West Coast Cement Plant Using Dorr C.C.G. Three 80 ft. Dorr Slurry Mixers in circle and two 150 ft. Dorr Thickeners at lower left. Two Dorr FX Classifiers and two Dorr Bowl Classifiers are housed in building in left center.

THE DORR C.C.G. SYSTEM

The Dorr C.C.G. (Closed Circuit Grinding) System consists of Dorr Classifiers in closed circuit with two stages of raw grinding mills, followed by Dorr Thickeners for slurry dewatering ahead of Dorr Slurry Mixers for blending and storage. The smooth, low cost operation of the raw end of a wet process mill thus assured, is well worth investigating.

Today's advanced and more intricate construction methods have put cement manufacturers on their mettle to deliver a better product. Emphasis on speed and still more speed has lifted cement from a standard commodity into the specialty class.

Effective slurry handling, as provided by the new Dorr Slurry Mixers, is a key step in the new manufacturing technique. Flexibility and control in tanks up to 40 ft. dia. for blending and kiln feeding—in tanks up to 80 ft. dia. for slurry storage.

Entirely new drive heads have been provided—quieter, more powerful and less power consuming. Worm gear drives for blending tanks up to 40 ft. dia. Balanced twin spur gear drives for storage tanks up to 80 ft. dia.

Shafts and arms are hollow and act as air reservoirs for pressure regulation. Anti-clogging air nozzles—many more of them, 22 in fact on the big 80 footers—deliver up to 11 cu. ft. of air per minute apiece—when you want it, where you want it.

The unique Dorr feature—mechanical mixing and in the horizontal plane plus air mixing vertically—pays off in a large way on three counts. It gives greater flexibility and control, yields a more homogeneous slurry and requires less power, including air compression, per unit of capacity.

DORRCO

● *Write for reprints of articles and technical papers.*

THE DORR COMPANY INC.

ENGINEERS • 570 Lexington Ave., New York

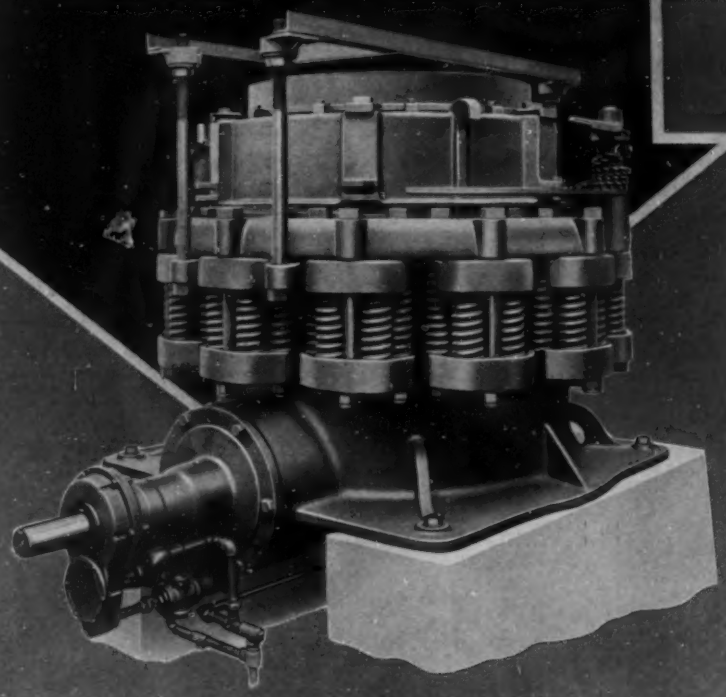
ATLANTA • TORONTO • CHICAGO • DENVER • LOS ANGELES

DORR TECHNICAL SERVICES AND EQUIPMENT ARE AVAILABLE FROM THE FOLLOWING COMPANIES:

HOLLAND: Dorr-Oliver N. V. The Hague
FRANCE: Soc. Dorr-Oliver, Paris
GERMANY: Dorr Gesellschaft, m. b. H. Berlin
ENGLAND: Dorr-Oliver Company Ltd., London
AUSTRALIA: Crossle & Duffy Pty. Ltd., Melbourne
SOUTH AFRICA: Edward L. Bateman Pty. Ltd., Johannesburg
JAPAN: Andrews & George Co. Inc., Tokio
ARGENTINA: Luis Fiore, Buenos Aires
BRAZIL: Oscar Taves & Co., Rio de Janeiro

THESE AND OTHER PRODUCERS OF MINUS ½ INCH MATERIALS FIND IT PROFITABLE TO USE

SYMONS SHORT HEAD CONE CRUSHERS



● The superiority of the Symons Short Head Cone Crusher for making minus ½ inch and even minus ¼ sizes is evidenced by this partial list of installations in this country in the non-metallic field alone. More and more producers of stone, gravel, slag, cement and other industrial minerals, have found that this Crusher will produce in greater quantity and at a lower cost than any other type of equipment used for a similar service. In many instances, the Short Head follows a Symons Standard Cone. By the installation of this Crusher, the increasing demand for finer materials can be met and produced at greater profit.

If your plant is not equipped to profitably produce these finer sizes, investigate the merits of the Symons Short Head Cone Crusher.

	SIZE
American Aggregates Corp.	4′
Arundel Corp.	3′
Basic Dolomite, Inc.	3′ & 4′
Becker County Sand & Gravel Co.	4′
Blue Ridge Stone Corp.	4′
Samuel Braens & Sons	4′
Buffalo Slag Co.	4′
Burton Brothers	3′
Carnegie-Illinois Steel Corp.	3′
Cleveland Slag Co.	Two 3′
Columbia Construction Co.	4′
Consolidated Stone & Sand Co.	7′
Crawfordsville Shale Brick Co.	3′
Dolite Co.	4′
John T. Dyer Quarry Co.	4′
E. P. Ellis	3′
Genessee Stone Products Corp.	3′
Honolulu Construction & Draying Co.	3′
Hopkinsville Stone Co.	3′
Kanawha Sand & Gravel Co.	3′
John W. Karch Stone Co.	Two 3′
Kelley Island Lime & Transport Co.	4′
John S. Lane & Son, Inc.	3′
Lone Jack Limestone Co.	4′
Louisville Cement Co.	4′
Marble Cliff Quarries Co.	5½′
Marquette Cement Mfg. Co.	4′
Maryland Slag Co.	4′
Minnesota Mining & Mfg. Co.	4′
Narehood Bros.	3′
National Lime & Stone Co.	3′ & 4′
National Lime & Stone Quarry	4′
Newton County Stone Co.	Three 3′
New York Trap Rock Corp.	4′
Ohio Blue Limestone Co.	4′
Ohio Gravel Co.	3′
Ohio Quartz Products Co.	3′
Orford Soap Co.	Two 3′
Pembroke Limestone Corp.	3′
Pennington Trap Rock Co.	4′
Permanente Corporation	5½′
Pompton Crushed Stone Co.	3′
Pounding Mill Quarry Corp.	3′
Raleigh Granite Co.	3′
Ridge Township Quarry	3′
Rockydale Quarries Corp.	3′
Standard Lime & Stone Co.	4′
Standard Slag Co.	Three 3′
Staso Milling Co.	4′
Sturgeon Bay Co.	4′
Suffern Stone Co.	3′
A. Teichert & Son, Inc.	4′
Carl B. Temple	3′
Thornton Quarries	4′
Trego Stone Corp.	Two 3′
Virginia Dept. of Highways	3′
West Nyack Trap Rock Co., Inc.	3′
Weston & Brooker Co.	3′

NORDBERG MFG. CO. MILWAUKEE WISCONSIN

NEW YORK 60 East 42nd Street · LOS ANGELES Subway Terminal Bldg. · LONDON Bush House · TORONTO Concourse Bldg.

It's a Real Rock Shovel

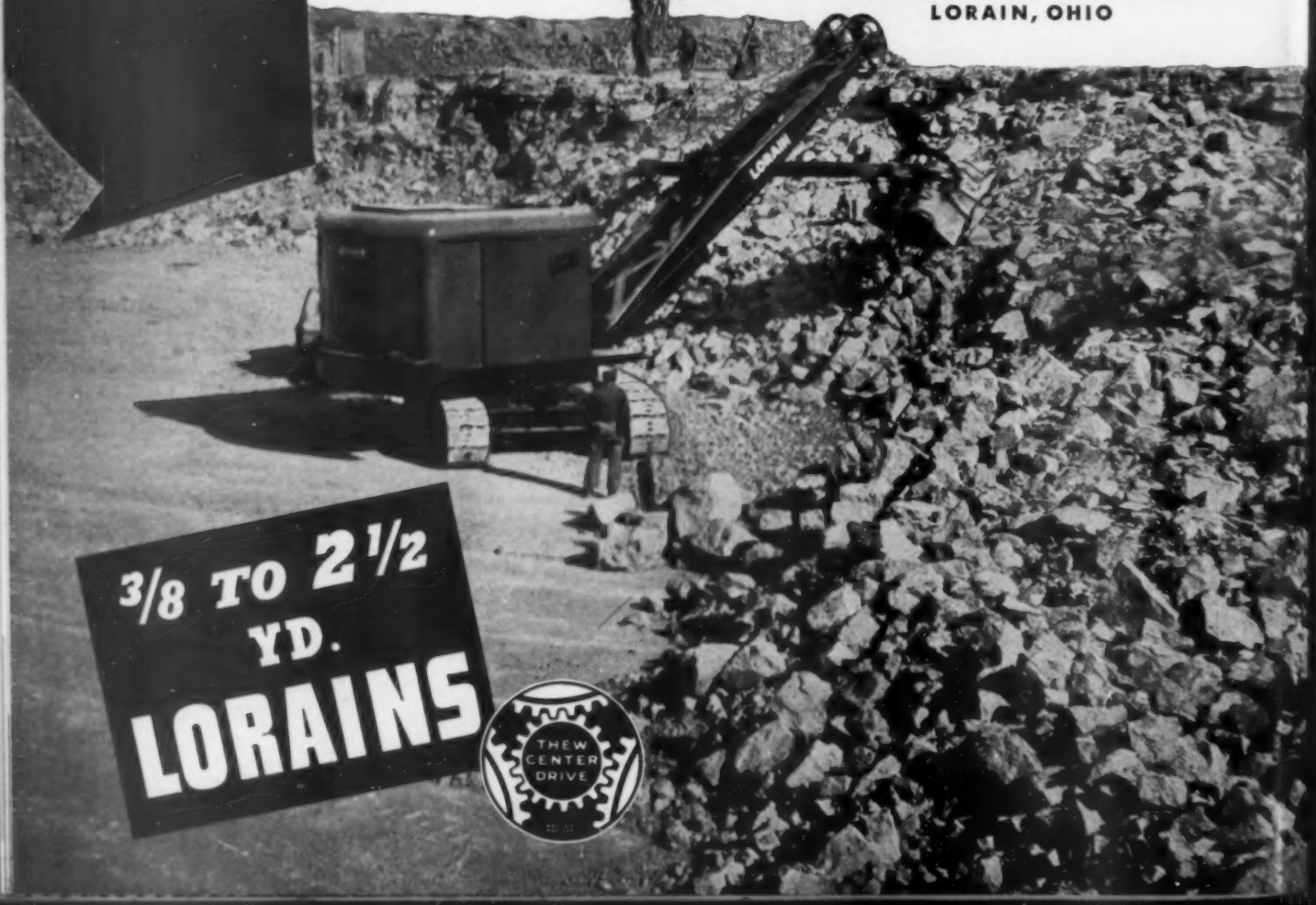
OR VALLEY DOLOMITE WOULDN'T HAVE IT

• You don't pick a shovel at random for digging like this—and stay in business. This is the second 1½-yd. Lorain purchased by Valley Dolomite of Bonne Terre, Mo. If the first unit hadn't proved to be a *rock* shovel in the truest sense of the word, the second would have never set foot on the floor of this quarry.

Every shovel in the ⅜ to 2½-yd. Lorain line has won recognition for its work in rock. And here are the features that do the trick—Center Drive design of turntable which produces increased capacities for handling more and heavier work; simplifies and strengthens construction throughout; and, most important of all, gives a direct flow of power that can be concentrated back of the dipper when you want to really bear down in tough digging. Lorain shovel booms are built to resist stress and strain; and every unit travels on a rugged, 2-speed crawler designed for maximum stability and ease of handling.

If you have rock to move—there's a shovel in the ⅜ to 2½-yd. Lorain line that's ready, willing and able to swing the job at a saving to you. Write for catalogs today.

THE THEW SHOVEL COMPANY
LORAIN, OHIO



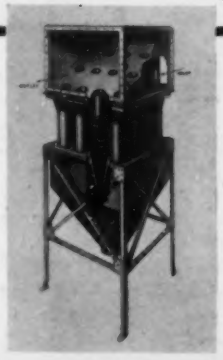
This 10-tube Multiclone is collecting dust from ground seashells.

SOME NEED 'EM LITTLE...

...SOME NEED 'EM BIG...

Today in most industries having a dust collection problem the necessity of having a dust collection installation is recognized. Multiclone operating efficiencies and installation economies are accepted, in fact, expected. The question asked most often by prospective purchasers is, "How big a Multiclone will I require?" Multiclones can be provided for any capacity with unit tube construction. Multiple assemblies in parallel provide for a volume of from a few c.f.m. to hundreds of thousands. The bottom limit is the capacity of a single tube and as far as we know there is no top limit.

. . . BUT THEY ALL NEED MULTICLONES!



Multiclone assemblies may be made up from 6″, 9″ or 24″ diameter tubes, or from combinations of these diameters, providing a range of collection efficiencies to meet your requirements. Test units are available for checking in your plant.

Multiclones are:
COMPACT AND FIRE PROOF
EASY TO ERECT—EASY TO INSPECT
LOW DRAFT LOSS SAVES POWER

A typical Multiclone tube assembly is illustrated in the cut-away view at the right.

Above is illustrated a 32-tube Multiclone installation collecting dust from rotary dryer operations. Such installations may be expanded to handle high gas volumes such as a recent 600,000 c.f.m. job.

MULTICLONE
MECHANICAL DUST COLLECTION

WESTERN PRECIPITATION CORPORATION
1015 West Ninth Street, Los Angeles, California

PRECIPITATION COMPANY OF CANADA, LTD.
Dominion Square Building, Montreal

BRANCH OFFICES IN IMPORTANT CITIES

MAIL COUPON FOR BULLETIN

WESTERN PRECIPITATION CORPORATION
1015 West Ninth St., Los Angeles, California

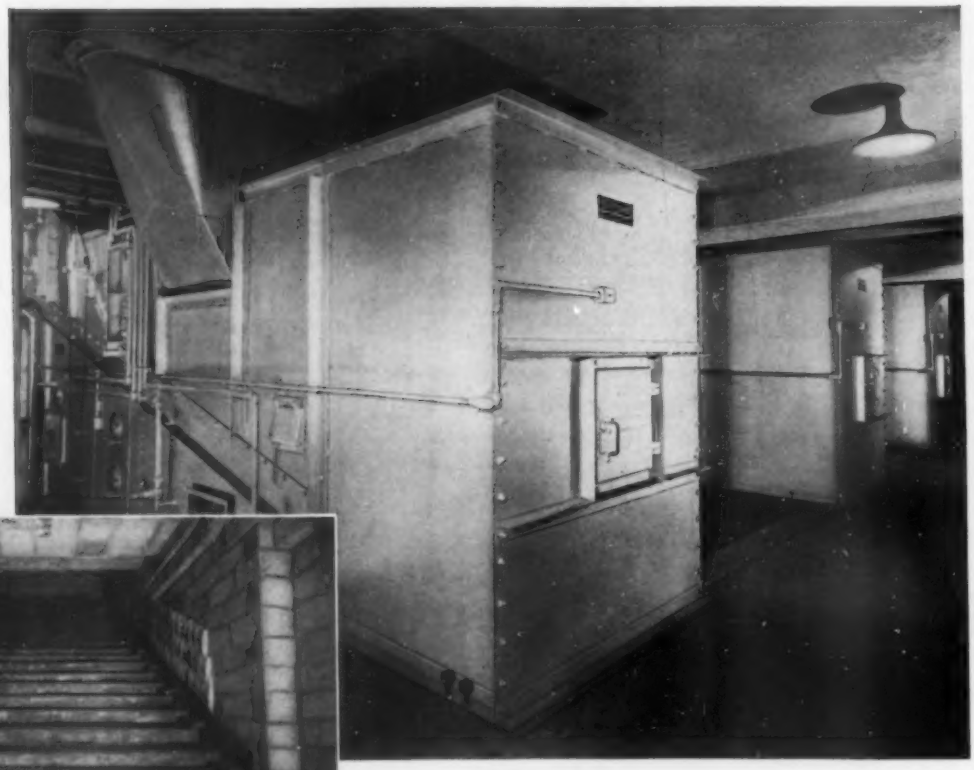
Please send Bulletin on Multiclone Dust Collectors.

NAME_____

NUMBER_____ STREET

CITY_____ STATE_____

FULLER AIR-QUENCHING COOLERS PROVE THEIR WORTH



RESULTS EXCEED EXPECTATIONS

Every Fuller Cooler installation has more than met specifications and claims made for it . . . in fact, results have exceeded expectations.

Since the first trial unit proved successful, sales have consistently mounted, until today 67 Coolers have been sold. Of this total 17 units have been repeat orders, proving beyond a doubt that Fuller Coolers do everything claimed for them, meeting the exacting approval of the chemical and operating departments of the many companies making these installations.

Our engineers are at your service. They'll be glad to confer with you at any time and make recommendations for any particular problem you have in mind.

Bulletin CO-2 illustrates and describes Fuller Air-Quenching Coolers . . . we'll send you a copy upon request.

REPEAT ORDERS

Company No. 1	
Initial installation	1
Repeat order	4
Company No. 2	
Initial installation	1
Repeat order	1
Company No. 3	
Initial installation	1
Repeat order	1
Company No. 4	
Initial installation	4
Repeat order	5
Company No. 5	
Initial installation	3
Repeat order	3
Repeat order	2
Repeat order	1

FULLER COMPANY
CATASAUQUA, PENNSYLVANIA

Chicago: 1118 Marquette Bldg.
San Francisco: 320-321 Chancery Bldg.

CO.8

FULLER-KINYON, FULLER-FLUXO AND AIRVEYOR CONVEYING SYSTEMS . . . ROTARY FEEDERS AND GATE VALVES . . . ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . AIR-QUENCHING COOLERS . . . BIN SIGNALS

Rock Products

309 WEST JACKSON BOULEVARD
CHICAGO, ILL.

June 1, 1941

Dear Subscriber:

Washington, D. C.: Another dam to cost (estimated) $41,200,000 on the Colorado River, 67 miles below Boulder Dam, is asked for by Secretary of the Interior Ickes, We expect some of his friends in our industry will suggest it is named after him, Bullshead (the s is superfluous) Dam. An appropriation of $5,000,000 to begin construction work on the project has been recommended to Congress by the Bureau of the Budget.

Buffalo, N. Y.: National Gypsum Company's April sales are reported to have exceeded any month in its history.

Washington, D. C.: For no announced reason the New Deal government insists on retaining as many voters on W.P.A. as possible. It was recently announced that 86 access roads projects, with an aggregate estimated cost of $15,000,000, have been approved. Extra shifts have been authorized in a number of instances to permit the work to go on 24 hours a day, 7 days a week (which, as W.P.A. "work" is done, will take care of a lot of voters).

Chicago, Ill.: Speaking before a meeting of the Producers' Council recently, Robinson Newcomb, O.P.M., Washington, D. C., estimated a probable 5 billion dollar demand for construction this year as a result of the National Defense effort.

New York City: A sand company, no less, is celebrating its One Hundredth Anniversary. That company is Whitehead Brothers Co., producers of foundry and industrial sands for a century. Officials celebrated at the Hotel New Yorker with many guests from the American Foundrymen's Association.

Washington, D. C.: Needed equipment for producers may be harder to get since a recent ruling by O.P.M. that critical metals (nickel, aluminum, etc.) can no longer be supplied to increase customers' inventories. Manufacturers have been ordered not to buy such for inventory.

New York City: Producers of aggregates, particularly sand, who remember previous experience in times of car shortages, apparently can expect having to repair delapidated open-top equipment. The railway traffic men are said to be considering suspension of retirement of such equipment for at least two years.

Washington, D. C.: The attempt of Leon Henderson to set the minimum price of coal under the Guffey Act as the maximum, to prevent spiraling increases in prices and other people's costs, has failed. He revoked his previous order, but warned that price action would be renewed if "unreasonable" prices are charged.

Allentown, Penn.: Lehigh Portland Cement Co. signed a new contract with United

Lime, Gypsum and Cement Workers' Union (A. F. of L.) granting an increase of 8¢ per hour to employes of the Lehigh Valley plants - said to represent a $100,000 year increase in labor costs. The base rate was increased from 57¢ to 65¢ per hour.

Ashville, N. C.: W.P.A. had a strike of 75 laborers at its Long Shoals quarry. They were asked to work 48 hours on a National Defense project instead of the usual 36 hours. They demanded 37¢ instead of 31¢ per hour - and a new foreman (the one they had made 'em work). Don't know how it came out, but the W.P.A. authorities were quoted as saying they would lock out all strikers and get a new crew.

Washington, D. C.: President Roosevelt has asked for $20,000,000 more to complete the Inter-American Highway as far south as the Panama Canal.

Oakland, Calif.: Henry J. Kaiser, president of Henry J. Kaiser Co., president of Permanente Corp., and of various others, has knocked off another big job. It is for a third set of locks for the Panama Canal - $22,436,860. The job includes the excavation of 30,000,000 cu. yd. of dirt, use of 2,000,000 cu. yd. of concrete, aggregate construction of five miles of highways and the relocation of three miles of railroad. Looks as though the Permanente Cement plant would be kept busy for a while longer.

New York City: Commenting on the Lone Star Cement Co.'s earnings for the first quarter, Wall Street Journal says: "Activity in the industry has been at the best levels for this season in many years. Also prices along the eastern seaboard in the first quarter were firm, all soft spots having been eliminated. The cement industry has been assisted by a sharp curtailment of imports as a result of the war."

Chicago, Ill.: Even in this city, far away from the war-enthused East, defense activity is beginning to register. Capital investment in new industrial plants in one recent month was 450 percent over the previous period a year ago. The big part the defense program has been playing in increased industrial facilities is reflected in the fact that 23 of the local expansions of the month were based on Federal certificate of necessity.

Raleigh, N. C.: After making a circuit of most of the important southern production centers we have come to the conclusion that established producers are taking care of defense construction demands very comfortably, without resorting to but very few new operations. Considerable change is required in some instances to meet more exacting Federal specifications.

Washington, D. C.: A good example of the philosophy of "everyone agin' business men" is illustrated in a release of the Federal Home Loan Bank Board which says: "From February 1940 to February 1941, labor costs increased 10.5 percent and building materials 6.2 percent. From January to February this year labor costs increased 0.5 percent and building materials 1.1 percent." Elsewhere, it speaks of the labor factor "reversing itself" this year. It's hard to see where ½ percent increase in labor costs in one month is a reversal of the trend of last year toward increased labor costs. Also, the increase in material costs, it would seem, might well be the result of increased labor costs of the previous year. Evidently, it is this 1.1 percent increase in material costs which has attracted the attention of Leon Henderson, national price fixer.

The Staff

Via Barber-Greenes

for ORDNANCE Plants

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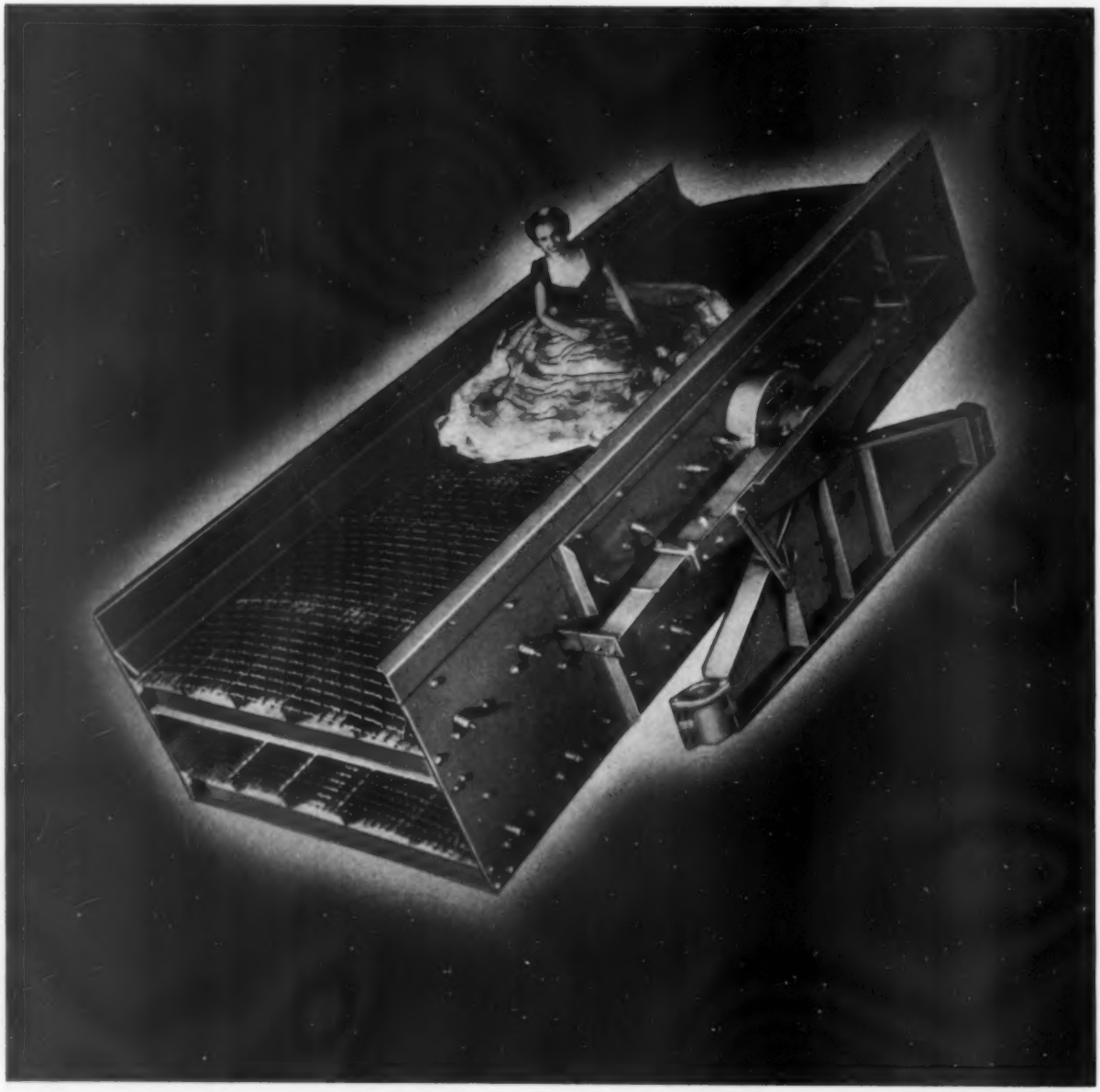
41-6

BARBER GREENE

STANDARDIZED MATERIAL HANDLING MACHINES

AURORA ILLINOIS



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THE WAR ISSUE

EVERY LITTLE WHILE someone asks why Great Britain does not state its war aims. If we ourselves are going "all out" to save the British Empire, why don't they tell us what it is proposed to do if they win, some of our politicians ask. There probably isn't any doubt in the minds of British statesmen as to what they are fighting for, and there need not be any doubt in the minds of American statesmen, politicians, or just plain laymen like ourselves, if we look at the matter frankly.

Obviously the British are fighting to save their empire. By empire is meant not merely dominions, colonies and land, but the British empire of business and industry, without which Great Britain itself would be a sorry spectacle. That empire of business and industry is founded on private initiative, private enterprise, private capitalism. All the rest of the world has been an imitator when it comes to the development and exercise of these faculties. Part of that empire of business and industry has been in Europe, as well as in Africa, Australia, and other places. It is doubtful if British statesmen today know by what peace terms or formula they could restore the lost parts of this empire of far flung business interests.

American interest in the issue is our own interest in the same kind of business and industrial institutions, or the same kind of an empire, somewhat more restricted and much more compact. Either alone, or in coöperation with the British Empire, our resources of liquid capital (gold) and business brains, if available for private capitalistic enterprises, are destined to become a great factor in a world where private initiative and private enterprise are given opportunities. Therefore, it is in the interests of both the United States and Great Britain to preserve the British Empire as a bulwark of the whole system of private enterprise.

Statesmen, both in Great Britain and in this country, apparently hesitate to put the issue thus bluntly, fearing doubtless that thus stated it would smack too much of materialism for enthusiastic support by millions of laboring people. Instead, they state the issue in such terms as "our way of life," "our freedom," "the things we love," etc.—sentiment for the multitude, practical considerations for statesmen.

The Germans never have been enterprisers in the same sense as British and Americans. They are great organizers and have long sought to accomplish by cartels and government subsidies and government direction, what free individual British and American business initiative has readily accomplished in various parts of the world, probably with their governments' encouragement, but nevertheless retaining practically all the essentials of a system of free enterprise and free competition. Being no match for British and American business brains and enterprise on this basis, the Germans seek by force of arms, and subsequently by political and economic servitude of conquered countries, to compel all industry and business to operate as a single German cartel, or economic unit.

By means of large scale barter and the operation of credit exchanges, they hope or expect to eliminate the need for liquid capital (gold) in a world of industry and business which they may control. The actual capital of the German Empire's industry, they say, will be *labor,* which will be told where to work, how long, what to be paid, what to make, what it can have to eat, what it can do for amusement, what it can read—and so far as brute force and propaganda can accomplish, what it shall think. The lot of management would be hardly any happier, although probably somewhat better paid in terms of physical comforts. Working people (which really would include all of us but statesmen and politicians) are promised *security* against want of physical necessities in return for surrender, soul and body, to the state.

Looked at thus squarely we can see the sincerity of statesmen who put the issue in terms of human freedom. So far as they know, so far as any of us knows by experience or from the study of history, there is no way to preserve much of any personal freedom save under a system of economy of free enterprise and private capitalism. It does not matter greatly whether our democratic forms of government are the result or the cause of free enterprise. The two are so intimately interwoven, that to intelligent people they can not be conceived of as existing separately.

It is extremely unfortunate that at this time when clear understanding and unity of purpose are so very essential, that our own American government and politicians continue to confuse the issue by constantly creating fresh fears and doubts as to their own objectives. In one breath they make impassioned speeches about shedding our blood for human liberty all over the face of the earth; in the next breath they show by word and act that they have not the slightest idea (or possibly intention) for preserving the very essence of our liberties in this country.

It is the intelligent working people in all walks of American industry and business, whether we call them workers, managers, or capitalists, and most of us a little of all three, who must recognize the issue and safeguard it at home as well as abroad. We can do this only by working for a common end—that end is the preservation of our constitutional Republic regardless of what we may or may not be able to do for the rest of the world.

Nathan C. Rockwood

NEWS AND COMMENT

Up-Keep Costs

LONE STAR CEMENT CORP., New York City, offers a good example of the continuous up-keep costs of strictly modern cement plants. With plants, real estate and machinery valued at $70,047,685, it spent in 1940 for additions to plants and properties (no new ones) $1,583,318, of which $643,326 represents the cost of silo cement storage, packhouse and machine stations at its Hudson, N. Y., plant. It also includes new unit coal pulverizers at the Hudson and Norfolk, Va., plants. For 1941 capital expenditures of $1,557,385 are authorized for additions and improvements. These figures, of course, do not include ordinary maintenance and replacement costs, which one is apt to think of as "up-keep" costs.

Fuel Costs Rise

Written before the recent coal miners' strike and the dollar-a-day increase in coal miners' wages (which has resulted in increased coal prices) the annual report of Charles L. Hogan, president, Lone Star, had this to say about fuel costs:

"Fuel forms a very considerable part of the cost of manufacturing cement, and prices for fuel at our domestic plants in which we burn coal (of which there are 6) advanced sharply during October as a result of the Commission, administering the Guffey Bituminous Coal Act, placing in effect increased prices on bituminous coal. The effect of this increased cost was not reflected until the latter part of November and it is probable that even higher prices will obtain during the year 1941, resulting in higher costs at the plants where coal is used.

"The situation at our South American plants, where oil is burned exclusively, has not changed greatly from the previous year. We have an agreement with the oil companies to furnish oil subject to a force majeure clause which relieves them in case of inability to supply because of war or other conditions. The Governments of Argentina, Brazil and Uruguay control the prices of fuel oil in those countries and adjust them from time to time as they think conditions warrant. They do, however, recognize the large part that the price of fuel plays in the cost of manufacturing cement, and have for the most part been reasonable in permitting adjustments of our prices to meet the conditions created by changes in fuel costs. In Cuba, we have a contract at a fixed price with deliveries subject to a force majeure clause similar to that in effect for our South American subsidiaries."

New Oil-Well Cement

Lone Star also reports that during 1940, its research department developed a new type of cement which is now being marketed under the trademark "Texcor." This cement, which supplements "Incor" cement and "Starcor" cement, is suitable for many uses but is particularly adapted for use in cementing oil wells of great depth, where the very high temperatures encountered require a cement of special characteristics. "Texcor" cement was developed to overcome this obstacle and we believe it will find a ready market wherever there are oil wells of great depth.

Shows Up "Labor Leader"

APPARENTLY the switch of quarry workers in St. Louis County, Mo., from C. I. O. to A. F. of L., did not go through according to schedule. The *St. Louis Post-Dispatch* reported 200 workmen employed in four St. Louis quarries have voted against joining A. F. of L. craft unions, largely because of the *Post-Dispatch* disclosures of the racketeering activities of "Buck" Newell, business agent of the Hoisting Engineers' Union, who several months ago began a drive to transfer the quarry workers from C. I. O. to A. F. of L. membership.

In voting to remain with C. I. O., the quarry workers upset a tentative agreement reached by their employers, the Greater St. Louis Quarrymen's Association, with the A. F. of L. Building Trades Council, under which the men were to become A. F. of L. members.

Men employed at the Riverview, Big Bend, Eyermann and Frank Ruprecht quarries voted to retain their C. I. O. membership and paid C. I. O. dues for May. Workers in the Bussen and Rock Hill quarries, organized by Newell before the quarry owners made their agreement with the Building Trades Council, have become A. F. of L. members and did not join in the decision of their associates.

Boycotts and disputes in the material business resulted because A. F. of L. men, headed by Newell, refused to handle stone from C. I. O. quarries. It was expected that the switch from C. I. O. to A. F. of L. membership by the quarry workers would clarify the situation.

Newell, as business agent of the hoisting engineers, who are the key men in building operations, would have dominated labor in the six quarries.

Wage Increases

FOLLOWING action by the Lehigh Portland Cement Co., other Eastern cement manufacturers appear to have quite generally made increases in basic wages of about 8c per hour. According to a local newspaper, Lehigh "offered to advance its present base rate because of the general upward trend in wages throughout all industry," said Joseph S. Young, president of the company.

Signing of the contract brought to an end five weeks of negotiations between the company and union. John Young, industrial relations director of Lehigh, represented the company, and Samuel Diskan, sixth general vice-president of the international union, headed the union delegation.

At all times during the talks, the relations between company and union were cordial, a company spokesman declared. Mr. Young, president of the company, said: "The extension of our present labor agreements is most gratifying to me, particularly because it carries with it definite assurances of the continued cooperation of all our mill employes."

Lone Star Cement Corp. also increased wages of its Hudson, N. Y., plant 8c per hour.

Signal Mountain Portland Cement Co., Chattanooga, Tenn., signed a new union contract calling for an increase of 5c per hour, full protection for employes called into military service, a strong safety program and seniority rights.

Volunteer Portland Cement Co., Knoxville, Tenn., is reported to have

made a simiar contract. The United Cement, Lime and Gypsum Workers International Union, A. F. of L., recently carried a N. L. R. B. election, 142 to 96.

Kelley Island Lime and Transport Co., Cleveland, Ohio, is reported to have increased wages of crews of its sand dredges 10 percent.

Standard Slag Co., Wheeling, W. Va., is reported to have increased wages 10c per hour, making the base rate 70c.

Probably many others have done likewise in the industrial East, where the increase in the steel industry wages was bound to be felt by all employers of common labor.

Special Conveyor Belt Speeds Job

EXAMPLE of the importance of details is a belt conveyor installation at Friant dam construction project, Central Valley, Calif., where according to M. H. Slocum, general superintendent for Griffith and Bent Co., contractors, the engineers of Stephens-Adamson Manufacturing Co. and the B. F. Goodrich Co. developed a 14,000-ft. series of cord belt conveyors to carry more than double the initial rated capacity of aggregates needed for concrete.

Mr. Slocum is further quoted by a local newspaper as saying that while the conveyor system originally was planned to handle approximately 600 tons per hour capacity it has been operated regularly at about 1,200 tons an hour without failure in any part. Another time-saving factor was the resistance of the new-type belt to stretching under the double burden.

The general superintendent explained that the conveyor system is being used in preparing some 4,000,000 tons of aggregates, for use in making concrete, from deposits two miles below the dam site.

Screening Wet Stone

THE EDITOR: I was interested in the reference to "flicking the screens" in the article on "Spalls for Agstone" in your May issue p. 41. Describing the difficulty in screening damp limestone through 10-mesh vibrating screens, the author says: "Long poles are flicked over the screens with a whipping action, occasionally, when blinding becomes excessive."

This "flicking the screens," bumping or brushing, when separating damp, sticky materials, such as screenings, clay, molding sand, or fertilizer materials, not only shortens the life of the screen mesh greatly, but it causes the screen section to lose its proper tension, resulting in loss of efficiency through dead area.

These agstone separations are around 10-mesh. We separate more difficult materials, such as clay and shale, at sizes down to 20-mesh, where the moisture content is just as high. To do this successfully, we use a light-weight of wire screen cloth, with a large percentage of open area, and less wire surface for such material to cling to. The cutting ability of the finer wires, also contributes to the success of this method.

It is difficult to sell the average producer on the idea of using this light-weight cloth with high percentages of open area. They insist on heavier weights which will last longer in service, although screening efficiency may be cut in half.

New processes of manufacture in the clay industry has made separations from 10- to 20-mesh imperative, and in that field, many operators have come around to our way of solving that screening problem. This light weight wire cloth is very low in cost. Some of the larger operators purchase it in 100-ft. rolls, thereby earning discounts up to 35 percent.

Standard stock widths are used, and with extra attachments on hand for applying new cloth sections, change of a wornout cloth can be made quite easily within 15 minutes.

In conclusion, no manual means, whatever, need be resorted to in keeping the screen mesh clean and free from blinding, provided sufficient screen area is used, with high frequency vibratory action of proper amplitude and sufficient power behind it; applying this intensive vibratory action uniformly over the screening area, in a machine designed to accommodate the lighter weights of wire screen mesh.

ALFRED L. ADRIANSON,
Universal Vibrating Screen Co.

Foresees Price Advances

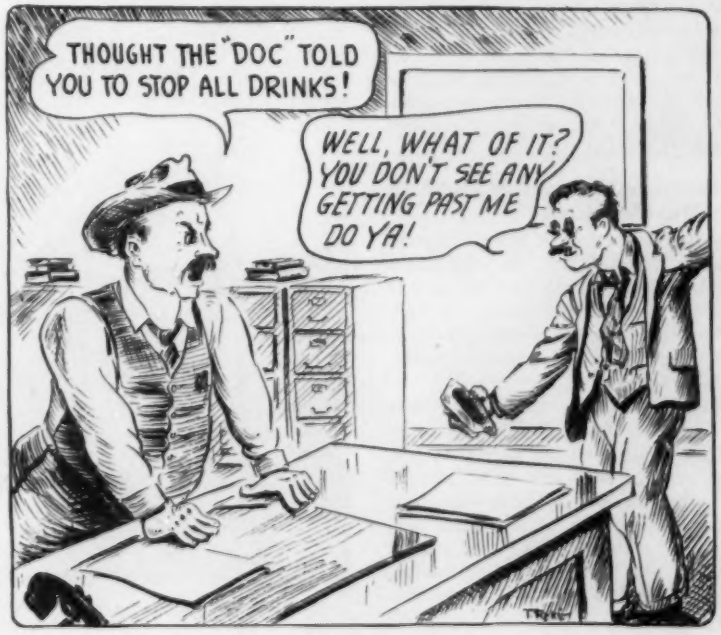
NATIONAL GYPSUM CO.'S president, M. H. Baker, Buffalo, N. Y., is given as authority for the statement that National's operating costs have been rising steadily in recent months, due both to higher raw material and labor costs. In an effort to offset this, the company on April 1 raised the price of metal lath one cent a yard. This was the second increase this year on this item, an advance of about 8 percent being made earlier in the year.

Higher prices for some other products manufactured by National also seem probable. One of these is gypsum lath, manufacturing cost of which has gone up about $1 a thousand feet. If there is any advance in this item, it probably would be about the same as the increase in costs.

Another product for which higher prices are talked is plaster. It is explained that costs have gone up about $2 a ton on the seaboard and about 50c a ton inland, while prices have remained unchanged.

It is believed that these price advances may be easily justified.

ADVENTURES OF SUPER DAN, THE SUPERMAN



Hints and Helps

★ FOR SUPERINTENDENTS ★

Portable Outfit for Welding and Repairs

IN A LARGE CRUSHED STONE PLANT in the south, over 400 tons of stone per hour are being crushed for a large government project. The primary crusher and other equipment are located on a deep quarry floor with the main plant on the bluff above.

Welding equipment carried to the job on special truck

Speed is important in filling this contract, which is subject to penalties for delay, and speed is necessary in making repairs and in general maintenance. To expedite repairs, the quarry operator has fitted an old truck with a 200-amp. electric welder, tanks, torches and other necessaries for upkeep around a crushed stone plant. When a breakdown occurs, the truck is driven to the location, a cord is plugged into an electrical outlet and work is started without delay.

The welder has 100 ft. of lead wire and 100 ft. of power cable, giving him a working radius of 200 ft. from 220-volt outlets conveniently located around the plant.

Economical Sand Handling for Batch Plant

IN THE OPERATION of a lime mortar plant in Birmingham, Ala., Standard Building Material Co. has its mortar sand shipped to the plant by rail, and has installed an economical system of storage and re-handling to the batching plant.

Batching is done from a 100-ton steel sand bin and yard storage comprises ten cars of sand adjoining the plant on one side and the railroad siding on the other. The handling equipment consists of a tunnel belt conveyor system under the sand stockpile, and an enclosed belt bucket elevator, 70-ft. centers, filling the steel bin.

Sand, as it is discharged into a track hopper from the cars, is conveyed by the belt conveyors to the elevator and either into the bin direct or into yard storage. The preference is to fill the bin first to avoid re-handling of the sand.

Sand feeds out from the track hopper on to a 16-in. belt conveyor, 32-ft. centers, which transfers to a second cross belt (the main belt under the stockpile) which in turn transfers to the bucket elevator. Sand direct from the cars travels this routing into the bin. When the bin is full, a splitter at the head of the belt is operated by chains from the bottom of the elevator to switch the sand into a pipe which fills the stockpile at its center over the main tunnel conveyor. The elevator capacity is 85 tons per hour, and the main belt is driven off the elevator—for reclaiming sand from stockpiles. The elevator and the belt conveyors were furnished by the Continental Gin Co., Industrial Division.

Mortar sand handling bucket elevators with spout leading from one of the elevators for stockpiling

Scaling Mine Ceilings and Loading Stope Holes

IN THE LIMESTONE MINE of the Cedar Bluff Quarry, Princeton, Ky., an old heavy truck chassis has been fitted with a steel boom and platform from which men can operate on the mine ceiling.

This mine is laid out in the conventional room-and-pillar pattern with corridors 35 ft. wide and a 22-ft. ceiling which is being raised to 40 ft. by stope drilling and blasting after the drift shooting is done. The vertical holes are drilled into the roof by a Cleveland wagon drill mounted on a timber platform.

The truck arrangement is designed to fill with powder and then rod these holes, which are on 5-ft. centers 18 ft. deep, and for scaling the roof, which requires considerable moving around. The truck boom is raised or lowered by a hand-operated hoist, and has a working platform on the boom end which assumes a horizontal plane with the boom in raised position. Two men ordinarily operate from the platform in loading the holes with 1¼- x 8-in. powder charges and, at the signal, a third man starts the truck engine and spots the boom platform under the next stope hole.

Left: Platform supported on movable steel boom is mounted on old truck chassis. Right: Using portable platform in mine

The overhead men need not come down and the third man prepares the blasting supplies which he carries up the boom. In this way the overhead work is quickly and easily done.

Electric Hoist Car

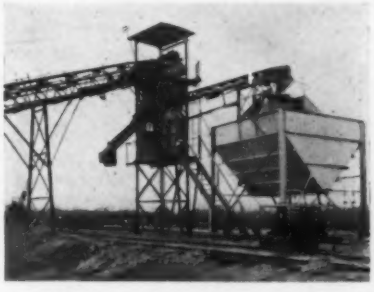
ANOTHER IMPROVEMENT to the Lincoln Sand and Gravel Co. plant is the specially designed electrically-driven hoist car for operation of the slackline cableway and scraper bucket used to reclaim material into the storage segments of the Kern system.

As may be seen in the illustration, the hoist car was made from a mine car truck frame on four flanged wheels, supporting the base on one end, and with three rollers on a third track at the other end. On this base is the Thomas hoist driven by a 60-h.p. G. E. electric motor with a 15 h.p. G. E. motor for driving the car over the semi-circular track. A long, heavily insulated power cable runs from the car to the power line.

The operator of the hoist car sits in the control cab on top of the roof, giving him a clear vision of the plant and the reclaiming scraper bucket. The pull and return ends of the cable operate from the hoist over sheaves suspended from a heavy steel A-frame, keeping the cable off the ground as much as possible.

Convenient Truck-Loading for Sand and Gravel

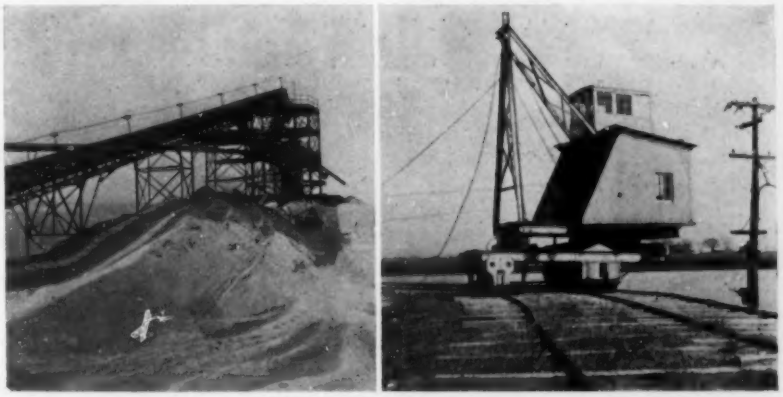
WHEN the Lincoln Sand & Gravel Co. completed its Kern system sand and gravel plant in 1939 (see ROCK PRODUCTS, May 1939, p. 26) railroad car loading facilities were adequate, but the method of loading trucks was not entirely satisfactory. A wooden bin near the entrance to the plant property was filled by a 60-ft. Barber-Greene conveyor having a 24-in. belt from a hopper type rail car moved from the car loading out station at the plant. Trucks received their loads by driving underneath the wooden bin. This necessitated double-handling of the material.



To the right, six-compartment truck loading bin; car loading chute to left

To eliminate the added handling cost, a six-compartment Butler bin was installed in line with the car loading out conveyor station, as shown in the illustration. One of the car loading spouts was removed and a 30-in. conveyor belt, 26-ft. centers was substituted. The conveyor inclines upward to the steel loading out bin for trucks. A revolving chute directs the material to any desired compartment in the bin. There is also a small Robins vibrating screen for rinsing material before passing it into the bin. Vertical levers, with signs indicating size of sand or gravel in bin compartments are within convenient reach of truck drivers.

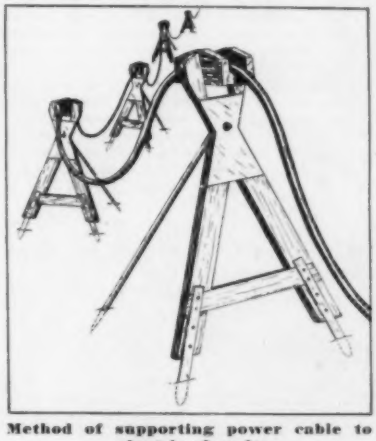
A flap valve controls the flow of material either to the truck bin conveyor or to the car loading chute. The electrically-operated power winch, shown in the illustration, is used to spot cars under the chute.



Left: Scraper bucket reclaiming material into live storage segments of Kern system. Right: Electric hoist car mounted on three-rail track, is used to operate scraper bucket

Quarry Power Cable

LONE STAR CEMENT CORP., at its Hudson, N. Y., plant is using two Marion electric shovels (Type 4121, 3-cu yd., and Type 37, 1¾-cu. yd.).



Method of supporting power cable to electric shovels

Current at 2300 volts is carried from the power house, or transformer, to the shovels. To avoid wear on cables and danger of grounding from dragging the cables across the quarry floor, the type of wood frames with a steel rod support, shown in the accompanying sketch are used. The tops have rocker saddles, so that the load is vertical, preventing side stress that would pull the frames over.

Chains Prevent Blinding On Vibrating Screens

A QUARRY OPERATOR in the south has hit on the idea illustrated in an attempt to prevent the blinding of vibrating screens when sizing fine materials which are unwashed.

This plant operator is using four 4- x 12-ft. single-deck horizontal screens in closed-circuit with crushing rolls to produce a manufactured stone sand. Three panels of spring steel wire cloth, having 0.198, 0.117, and 0.115-in. square openings are used on each screen. The screens are fitted, as shown, with about 1½-in. steel chains fastened to the sides and ends of the screen. There is enough slack so that the chains, both lengthwise and cross-wise, have a movement in several directions. The purpose is to continually strike the screen cloth with moderate blows and "scuff" over the cloth as the material passes over it.

Chains riding on top vibrating screen prevent blinding when screening fine material

Making Fifteen Sizes of Sand and Gravel

Sand settling tanks and funnel-type classifiers, used in making concrete, mortar, and asphalt sands

By BROR NORDBERG

AN IMPROVEMENT PROGRAM at the Peru, Indiana, plant owned by J. C. O'Connor & Sons, Inc., was carried out during the late winter and early spring of 1940. The old plant, built 12 years ago to produce aggregates for the construction of 25 miles of concrete pavement and then remodeled and operated up to the close of the season in 1939 as a commercial plant, was limited in capacity. It was inadequate for meeting the demands of the market and the successful processing of the character of material contained in the deposit.

The new operation involved a change in the manner in which material was to be excavated, having previously been dug with a cable excavator to a depth of 110 ft., and now is handled by dragline operation at limited depth. The effect of this on the grading of the material as it came from the pit was an important consideration, particularly since it was known that the upper 45 ft. of the deposit was coarse and in areas contained only a very limited percentage of sand, making it imperative to save or to enable disposal of all fines in such manner as to permit their recovery.

The plan finally followed in the new construction was adopted in an endeavor to get a basic layout which would meet the need but which would, as changes become necessary after experience obtained in operation, permit these to be made and the plant altered without excessive cost or effect on this layout.

Showing various steps in the production of 15 sizes of sand and gravel at Peru, Ind., plant of J. C. O'Connor and Sons, Inc. 1—Crushing plant in foreground and conveyor to sizing plant. 2—Crushing plant at rail hopper. Gyratory crusher at ground level. 3—Tipple arrangement for loading cars. Conveyor belt on the right is from bins to flushing screen, then to belt on left to cars. Above are conveyors from crushing plant. 4—Funnel classifiers for recovering fine sands. 5—Intermediate sand tank in flume line

Enlarge Settling Area to Recover More Fines

Operation of the plant during the 1940 season has proven the soundness of this reasoning. A balance has been maintained between gravel and sand as demanded by sales during the period, along with a capacity which under test has reached a peak of 300 tons, normal operation being maintained as needed at 150 to 200 tons per hour, depending on delivery made from the pit over the temporary system of tracks installed in the rush to begin spring operations. The greater flexibility required in producing the various sizes of aggregate, particularly partially crushed and 100 percent crushed material also has been obtained to a great degree.

Three varieties of sand—concrete,

asphalt and mortar—have been produced, but the principal difficulty had been to retain sufficient fines. Sand as it occurs in the pit is about 45 percent of the total but contains only 1 or 2 percent minus 100-mesh and 9 or 10 percent passing 80-mesh. Improvements in sand classification have been principally in the direction of larger settling areas in order to catch as much of the fines as possible.

Highway specifications stipulate that 95 to 100 percent of the concrete sand be retained on a 100-mesh sieve and 80 to 95 percent on the 50-mesh. With the present plant, concrete sand production has been doubled to 500 tons in 10 hr., asphalt sand capacity is 150 tons in 10 hr., and 15 tons a day of mortar sand are produced.

Fifteen grades of sand and gravel can be produced in the plant, including a 55 percent crushed gravel for highway construction, a 100 percent crushed gravel and railroad ballast.

Until recently excavation was done by a slackline cableway, with a 2-cu. yd. bucket dumping over a grizzley at the head of the plant, but this was discarded in favor of a dragline operation to step up capacity. The machine now in use is a Model 8 gasoline-driven Northwest dragline with a 70-ft. boom and a 1½ cu. yd. bucket. Delivery to the plant at this time is in single cars carrying 43 tons, hauled by a 9-ton Plymouth locomotive on standard gauge rails.

Changes to Step Up Capacity

The layout consists of four parts: a scalping plant where most of the crushing is done and railroad ballast is produced; a washing plant for sizing gravel; the sand classification equipment; and a flushing plant for additional washing upon reclaiming gravel from bins for shipment in railroad cars. Bucket elevators are the means of transportation and elevation where necessary in each of these units, with belt conveyor transportation between these stages of production. Details of the equipment specifications are given in the accompanying flowsheet on the next page.

Flow of Material

Pit run material is dumped into a track hopper, where a 30- x 60-in. Jeffrey-Traylor vibrating feeder regulates the flow out into a Jeffrey bucket elevator which discharges over a 5- x 8-ft. triple-deck Deister "Plato" vibrating screen. This screen normally has 2, 1¾- and 1½-in. openings from the top to the bottom decks, respectively. All plus 1½-in. material is put through a 3-ft. TY Traylor reduction crusher along with some plus 1¼-in. gravel retained on a 4- x 6-ft. single-deck Deister "Plato" vibrating screen. A 40-ft. Jeffrey bucket elevator returns the crusher discharge to the first screen, so that approximately 1¼ in. is the top size to be conveyed to the screening and washing plant.

A 24-in. conveyor belt, 152-ft. centers, transfers to one on 73-ft. centers delivering material to the screening and washing plant. One of the purposes in having two belt conveyors is to make the crushing and scalping plant a self-contained unit insofar as production of ballast is concerned. Provisions will be made to take this material off the head of the first belt conveyor for passage to a flushing screen, which is now in use to rinse finished material drawn from bins for shipment.

Screening and washing are done over four vibrating screens which, with concrete sand tanks, are superimposed on three circular steel bins of 250 tons capacity each. Gravel and sand are first put over a 4- x 10-ft. Telsmith triple-deck vibrating screen. Oversize from this screen is crushed and sized as 100 percent crushed

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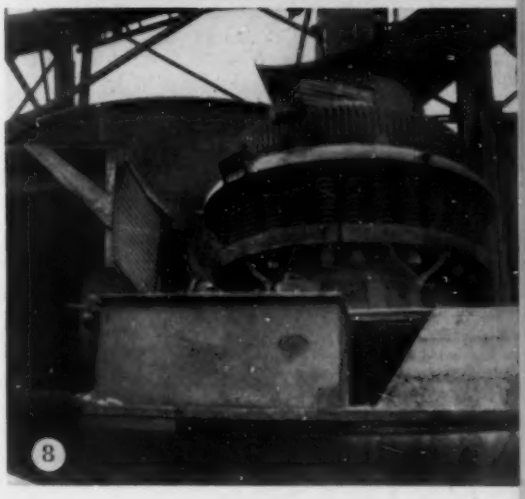
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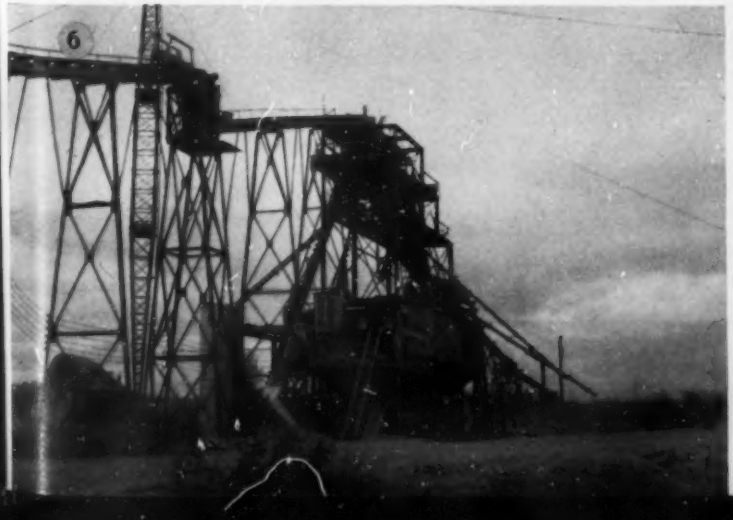
Views of screening and crushing operations. 6—Washing and screening plant; conveyor from crushing plant on left and sand flume on right. 7—Other side of plant, showing sand settling tank and flume to the right. 8—Gyrasphere crusher for reduction. 9—Feed is split to two sand tanks to produce concrete sand. 10—Large loads are handled to the plant, 43 tons to the car, by gasoline locomotive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gravel, while the throughs are further sized over a 4- x 10-ft. Telsmith double-deck vibrating screen.

Oversize from the triple-deck screen is stored in a concrete silo of about 65 tons capacity, which is a surge bin for the production of 100 percent crushed gravel. This bin is the feed to a 36-in. Telsmith gyrasphere crusher, with the crushed product elevated to a 3- x 6-ft. triple-deck Deister "Plato" vibrating screen for sizing the crushed material. All the sand is put over a 4- x 8-ft. Deister single-deck screen, where a shot size is taken off and the throughs (minus 4-mesh) become the feed to the sand plant.

Minus 4-mesh material is split equally into two No. 7 Telsmith sand settling tanks which discharge automatically. Concrete sand drops into a bin and the overflows, carrying the fines, are processed first into asphalt sand and then into mortar sand. From 1500 to 1800 g.p.m. of water are utilized in washing.

A 70-ft. wood flume, sloping 1¾ in. to the foot, delivers these fines and water into a No. 6 Telsmith sand settler, and another flume, 85 ft. in length, sloping 1½ in. to the foot, continues to carry on the overflow from this tank for the recovery of mortar sand. Overflow to the No. 6 tank which produces asphalt sand contains 0 to 10 percent minus 100-mesh fines, 5 to 35 percent between 50- and 100-mesh and 25 to 60 percent between 50-mesh and 16-mesh. The requirement is for 0 to 10 percent allowed between the No. 4 and No. 8 and 15 to 35 percent between 8-mesh and 16-mesh.

Mortar sand is recovered at the end of the 85 ft. flume section in five Deister compound funnel classifiers, which are in theory hindered settling classifiers. At present they are used as simple settlers without the addition of hydraulic water and the overflow is carried to waste in a wood flume 50 ft. long.

Mortar sand has a gradation of 90 to 100 percent on 100-mesh, 60 to 85 percent on 50-mesh, 25 to 50 percent retained on 30-mesh and 0 to 10 percent on the 8-mesh. It is estimated that three percent of fine sand is now being wasted and that 2 or 3 percent minus 100-mesh is being recovered. These funnel classifiers are to be fitted with water lines for the introduction of hydraulic water to make a separation at approximately the 100-mesh. Consideration is also being given to the recovery of previously wasted fines by pumping them to bypass the sizing screens into the sand tanks.

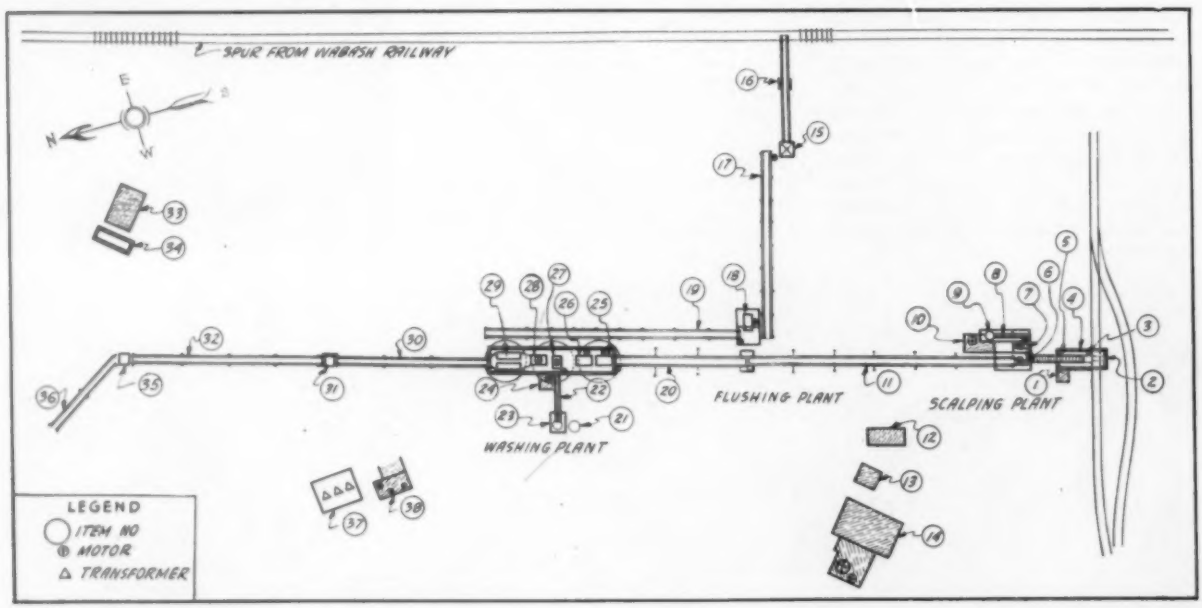
Gravel is drawn from any of the three gravel bins, which are in a row, or any blend can be made on a common belt conveyor for loading railroad cars. This conveyor feeds a 4- x 10-ft. Telsmith single-deck vibrating screen which is for flushing purposes only, and the product is conveyed by belt conveyor and placed into cars by a portable conveyor, 60 ft. centers.

Frank M. Welsh, Frank M. Welch Engineering Service, Inc., Greenville, Ohio, designed the original plant. R. E. O'Connor is president of J. C. O'Connor and Sons, Inc.; M. P. O'Connor, vice-president; T. L. Asbury, secretary, and R. L. Magee, treasurer. Fred Davenport is plant manager.

Plan and flow sheet of J. C. O'Connor & Sons, Inc., plant at Peru, Ind. 1—Building housing motor-generator safety switches. 2—Track hopper. 3—Vibrating feeder. 4—Elevator pit. 5—Jeffrey bucket elevator. 6—Triple-deck Deister screen. 7—Single-deck Deister screen. 8—Bucket elevator, 40-ft. centers. 9—Traylor TY crusher. 10—Crusher motor building. 11—Belt conveyor, 151 ft. 9-in. centers. 12—McElroy trailer. 13—Tool shed. 14—Repair shop and hoist room. 15—Truck hopper. 16—Portable conveyor, Le Roi gas motor. 17—Belt conveyor, 97-ft. centers. 18—Telsmith single-deck screen. 19—Belt conveyor, 130-ft. centers. 20—Belt conveyor, 73-ft. 3-in. centers. 21—Stone bin. 22—Bucket elevator, 67-ft. centers. 23—Telsmith gyrasphere crusher. 24—Building housing crusher motor. 25—Triple-deck Telsmith screen. 26—Telsmith double-deck screen. 27—Triple-deck Deister screen. 28—Single-deck Deister screen. 29—Two No. 7 Telsmith sand settlers. 30—Wooden sand flume, 70-ft. long. 31—Telsmith No. 6 sand settler. 32—Wooden sand flume, 85 ft. long. 33—Office building. 34—Scales. 35—Funnel classifier (5 funnels). 36—Wooden sand flume, 50-ft. long. 37—Subatation. 38—Pump, 6-in., 8-in., and priming pumps

Phosphate Rock

FOR THE SECOND TIME in the history of the industry, shipments of domestic phosphate rock have reached the 4-million-ton mark. Total shipments in 1940 were 4,002,700 long tons valued at $12,334,662, an increase over 1939 of nearly a quarter of a million tons, or 7 percent, but short of the 1920 record peak by about 100,000 tons. Domestic demand for phosphate rock in 1940 jumped 16 percent over that of 1939, an increase of 442,597 tons, far more than counterbalancing the 21 percent decrease of nearly 200,000 tons in exports, which declined to only 751,495 tons. Imports of phosphate rock were restricted to 2,953 long tons from Curacao.



Gypsum Quarry in a Desert

Dry cleaning necessary as water is not available. Cut down blasting charges

By FLOYD SUTER BIXBY

DESPITE its forbidding grandeur, the desert is being made to serve twentieth century needs. Fifteen miles west of Maricopa, Lange Brothers of Tehachapi, Calif., are quarrying gypsum, blasting it out of an enormous deposit in Quatal Canyon of the Sierra Nevada mountains.

This silica-free gypsum deposit is said to be the largest in California. Lying in a vein 40 to 45 ft. thick and covering several square miles of area, it assures a bountiful supply sufficient to last for 200 years of steady mining. As the deposit is contained within lands controlled by the National Park Service, a government lease was granted to the Monolith Portland Cement Co. and gypsum quarrying was then let under a subcontract to Lange Brothers in July, 1940.

The principal restriction imposed upon Lange Brothers was the specification limits of the gypsum when it left their crushing plant. For unless it was at least 90% pure, with only 4% of lime and 6% of solubles, it fell outside the acceptable limits. If water had been available, cleanliness would have been no problem. A trommel and a washer could then have easily removed clay and dust from the gypsum. But the job, situated as it was in the middle of a blistering desert waste, was devoid of any water supply at all. Even the drinking water for the camp had to be hauled in. One of the first considerations, therefore, was to develop a method of dry cleaning the gypsum.

An Allis-Chalmers Model HD10 tractor powered by a General Motors full Diesel motor and fitted with a cable controlled Crook bulldozer and power unit, was brought in. This machine was used to pioneer road cuts up the mountainside, strip any clay deposits away, and to grade off a camp site. Less than 25% of the mining operation is stripping. This equipment also is used to push rock into range of shovel.

Below: Shovel loading two trucks in "double-parking" system. One driver for both trucks

Above: View of gypsum quarry crushing and screening plant operated by Lange Bros. Material goes through two crushers, a revolving screen, and is stockpiled by the belt conveyor at the bottom

Drilling and Blasting Methods

The stripped deposit was drilled, using 20-ft. steel with 2¼-in. jackbits at the top of the hole and 1¼-in. bits at the bottom. Holes, spaced about 25 ft. apart, were loaded with a pound of 60% gelatine per cu. yd. of material. When the first blast went off Supt. Lange knew that he had to make other arrangements about his shooting for the gypsum tended to fracture into pieces so small they could not be picked up by the loading shovel without picking up an excessive amount of dirt as well.

Use Small Shovel Dipper

Reducing the depth of hole to 10 ft. and changing the powder charge to ¾ lb. per cu. yd. corrected the situation and gave consistently better results. Gypsum thus shot was rolled down in chunks weighing about 1000 lb. maximum size. These larger pieces were broken down to 100 lb. size by air gads.

A Bucyrus-Erie 10B shovel carry-

Top view: Diesel tractor equipped with bulldozer pushes broken gypsum into range of shovel. Bottom view: Loading finished product out to 11-ton trucks

ing a small dipper of ½ cu .yd. capacity loads the broken gypsum rock into trucks. The advantage of a small dipper in this quarry is that it makes possible the sorting of material with resulting cleaner loads.

One Driver for Two Trucks

A double truck system of loading was practiced. In this system while the shovel loads one of the Ford 5-cu. yd. dump trucks, the other is on its way to the crushing plant. Returning, the driver parks at the shovel and drives the other loaded truck to the crusher.

To assure breakdown-free operation, belts, screens, and minor parts subject to breakage are kept in good repair by the use of a portable electric welder and spare parts. Supt. Lange has had to think of everything; he keeps spare break lining, fuel lines and ordinary parts always on hand. He has even rejuvenated the shovel and tractors by installing preformed rope for longer rope life.

Working in this rock dust, a fully lubricated rope will soon coat with abrasive particles which will stick to the grease and grind inside, wearing the rope and sheaves prematurely, therefore, it is necessary here to forego the lubrication. Under-lubricated, preformed rope is used because the strands, preshaped during manufacture to the form they assume in service, are said to stand more bending and friction than will under-lubricated non-preformed rope.

A 7000-ton per month schedule must be met by Mr. Lange. Included in his contract price of $1.30 per ton are stripping, blasting, loading, screening and crushing operations.

Trucks hauling gypsum an average of 1000 ft., dump their loads on a 30-ft. rail grizzly set at an angle of 35 deg. One man who runs the plant picks out any stray pieces of clay or roots of cactus not sorted by the 10B shovel. Oversize drops into an 18- x 36-in. primary jaw crusher set to break the pieces to 3-in. size. The crusher product joins the grizzly throughs as the feed for a secondary crusher with jaws set at 1½ in. The gypsum is then ready for cleaning.

Dropping into a revolving trommel screen 9 ft. long, the clay and fines drop out of the ¼-in. openings in the first 6 ft. of the screen. This is wasted nearby and pushed out of the way from time to time by the Allis-Chalmers bulldozer. Larger pieces of gypsum drop through 2-in. openings in the last 3 ft. of screen and travel by conveyor belt to the stockpile. Laboratory tests are run several times daily to insure a clean product.

The stockpiled material is loaded out by an Allis-Chalmers "WM" mounted Hough loader into Ford transports with 11-ton trailers. These trucks haul the gypsum 35 miles to Maricopa where it is sent by rail to the cement mill at Tehachapi. This part of the work was let under subcontract to N. S. Bryant of Maricopa, who keeps enough transports on the job to meet the mill demand.

The entire mining crew lives in a camp near the quarry in air conditioned trailers.

Purifying Gypsum by Flotation

Pilot plant tests indicate that cationic reagents have merit in the flotation of impurities from gypsum ores

U. S. Bureau of Mines has issued Reports of Investigations No. 3553 on "Cationic Reagents in the Flotation of Silica from Gypsum Ores," by J. Bruce Clemmer and F. D. DeVaney. To rock products operators the "Ores" is superfluous; to a mining engineer every rock worthy of treatment is an ore.

The introduction states: "The large amount of high-grade gypsum available has discouraged any serious attempt to concentrate the ores by ore-dressing methods. Although flotation or gravity methods might be used the relatively small demand for high-purity material has not justified the adoption of wet concentrating methods. In the building and cement industries color and purity are relatively unimportant, and domestic ores satisfy the requirements. In the glass and ceramic industries, however, a gypsum product free of silica is desirable, but the requirements are not rigid.

"Gypsum can be floated from silica successfully with the fatty acids, the fatty-acid soaps, and other anionic reagents, such as the long-chain alkyl sulfates. The majority of domestic ores, however, contain such small amounts of impurities that reversing the separation and floating the impurities rather than the gypsum warrant consideration. Less material has to be floated, and a single-stage flotation operation produces a finished product. The object of the tests embodied in this report was to determine the merit of certain cationic reagents for the flotation of silica and discoloring impurities from gypsum ores. Samples were obtained from various localities; their source and their analyses are recorded. (They run from 88.49 to 99.56 percent gypsum, with 6.02 to 0.8 percent silica.)

"Flotation tests in the laboratory and in the pilot plant indicated that cationic reagents such as DuPont 243, Emulsol 903-L, and DLT 699 can be used to float the silica and discoloring impurities in gypsum ores.

"Relatively large amounts of reagent are required, and the froths are not particularly good. Of the reagents tested, 903-L and DLT 699 gave the best froths and were preferred.

"The pilot-plant tests definitely indicated that cationic reagents have merit for the flotation of impurities from gypsum ores. Further testing of ores containing appreciable amounts of silica will be required to determine fully how these reagents will respond to continuous operating conditions when middlings are returned to the initial flotation circuit."

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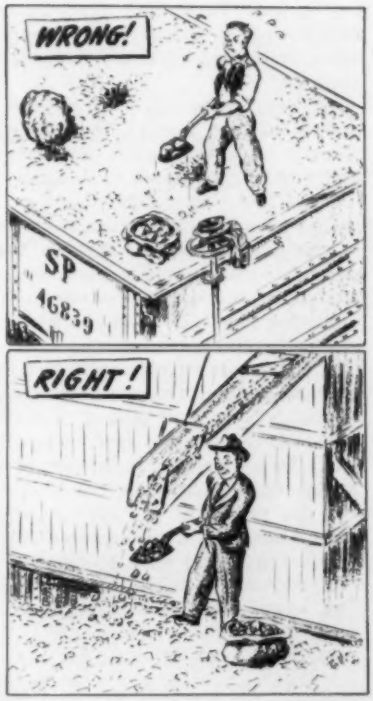
Billings Truck Co., San Diego, Calif., which has been hauling sand and gravel to their plant, is now building a plant to recover material.

Accurate Sampling

ARTICLE TWENTY-ONE

On sizing testing and specifying aggregates emphasizes the importance of having samples taken by a trained engineer to secure accuracy

By ELWOOD T. NETTLETON*



BECAUSE there is no complicated machine or mathematical computations as in testing, the sampling of stone is often considered lightly. The average testing machine costs run up into hundreds of dollars and the operators of these machines are usually experienced, well-trained men. The results of their tests are carried out to several decimal places with great accuracy. Because of the perfection of machines, routine testing practice, and mathematical checks, the inexperienced may, after watching a few tests, run similar tests comparable to the experienced with a very small chance of any appreciable error.

In order to check this fact, tests were run by an inexperienced operator and rechecked by an experienced operator in one company's laboratory on the Ty-Lab Tester. Allowing for breakage in the testing machine there was no appreciable difference.

How Large a Sample?

In regards to sampling, as compared with testing, the reverse seems to be true. The low salaried, inexperienced new inspector is usually told by the chief-inspector to run down to the railroad siding to take a sample of stone and to express it to the laboratory for a test. The writer knows this to be the general practice. Unfortunately, material, such as crushed stone, which has a large range from maximum to minimum tends to segregate. For this reason the selection of a fair and truly representative sample of the grading of the whole is quite difficult. It requires an experienced person with practical knowledge along these lines to know where to take the samples, and to judge how large a sample should be taken. In general it is recommended that for gradation (sieve analysis) tests of crushed stone the weight in pounds of the sample should be at least thirty times the size of the largest sieve required, expressed in inches.

As a result the writer is firmly convinced, both from actual field experience, and as the results of the actual tests run, that it would be wiser to have the highly trained engineer do the sampling in all cases, and the less experienced men do the routine testing. From this it should not be construed that check tests and research tests should be done by any other than experienced well-trained laboratory technicians.

Need Trained Materials Engineers

It is recommended that large users of stone; such as, states and municipalities should have trained materials engineers who could sample and inspect stone at the source of supply before shipment, or else on the job, preferably the former.

In the selection of these materials engineers it is recommended:

(1) That they should have had previous laboratory experience, or if not, a short period of training in the laboratory should be provided before they do actual field sampling.

(2) That they be trained engineers.

(3) That they be absolutely honest.

(4) That they be sufficiently paid to enable them to be honest under possible temptation.

Inspection and Sampling at Source of Supply and Job

Regarding crushed stone, probably not over 10 percent of the customers sample and inspect the crushed stone at the source of supply. As stated before this inspection and sampling has usually been done by sub-inspectors on the job.

In spite of the fact that there is a standard procedure for lifting samples from cars, trucks, or barges, it is very questionable if this recommendation is rigidly followed out.

Let us take for example the carload shipments: Samples should be taken at various places in the car such as the middle points, sides, and ends and the composite sample should be quartered down to the desired size. These samples should be taken by digging down (at the points mentioned) two or three feet deep and starting at the bottom of each hole to drag the point of the shovel up the side.

Assume for example we are sampling a car of mixed stone screened from 2- to ¾-in. in size. This stone would probably be one of the hardest to sample although one of the most important, as the stone might be used for concrete pavement.

In the first place, did you ever try to dig down five or six holes two or three feet deep in a car of stone this size? In bringing up the point of the shovel, many pieces of the finer sizes of stone slip down through the voids in the bigger stone. Next, crushed stone weighs quite heavy. For each hole possibly 20 lb. would suffice as a minimum, making a total of 120 lb. for the six holes. This would mean taking for samples two large bags, since 120 lb. can not be conveniently carried down the ladder of the car. These two bags would then have to be dumped on a clean platform, usually not available. The samples must be thoroughly mixed and halved or quartered which, in itself, would call for some judgment. The smaller sample would then have to be sent to the laboratory. In an actual test under "Human error in sampling," of this series (ROCK PRODUCTS, Nov., 1939, p. 41), it took the writer one hour to sample, bag, and label one test sample from each of three cars. What a work-

* Vice-president and general manager, T. Suzio Construction Co., L. Suzio Trap Rock Co., The Suzio Trap Rock Co., and the York Hill Trap Quarry Co., Meriden, Conn.

out it was! These cars were loaded with 2- to ¾-in. in size stone. Furthermore, no quartering of stone was attempted.

On this particular job approximately 12 cars per day were being shipped in. Even though demurrage might be paid, it would be impossible to keep five days' shipments of cars on hand, or actually 60 cars of stone, awaiting test results.[1] Besides the stone cars there would be cars loaded with sand and cement. Consequently, side track facilities would not permit such a program.

In the meantime, not being able to hold the stone in the cars, the stone is unloaded into stock piles with other stone, where the stone from each car load loses its identity in the pile, and possibly is incorporated in the job before the results of the tests arrive. To test samples of all of these cars individually, along with possibly fifteen of twenty other construction jobs, would more than tax the capacity of any laboratory.

The maximum deviation in sampling between inspectors of a car of stone on the job was 31.1 percent whereas sampling the same stone out of the chute at the quarry was only 6.9 percent.[2]

Inspection and Sampling Should Be at Plant

With the above facts in view, it is recommended that the materials engineers have as their duty the sampling of crushed stone at the quarry whenever possible.

Whether these engineers were located at the plant, or visited the plant several times a week, fair samples could be taken with ease directly from the bin chutes, and from the various storage piles. Loaded cars and trucks could be inspected as well as plant conditions and operations. Screens and screen openings could be measured and inspected from time to time.

Because of the difficulty in time and cost, no quarry producer could afford to change his screen back and forth between visits of the materials engineer in an attempt to get away with anything.

The only two possible chances of error which might escape the materials engineer would be the mixture of two primary sizes of stone, or dirty stone. The former could be controlled by weighing or not permitting producers to mix stone except in the presence of a materials engineer or his representative. Mixing of two primary sizes at the plant, however, probably does not constitute more than 5 percent of the shipments and should not be a determining factor. Dirty or coated stone would be noticed by inspection on the job, even by the untrained sub-inspector who could hold up the use of the material until rejected or passed by his superiors.

As a further check, the materials engineer could forward to the job a chute sample of stone which has been tested and found satisfactory. This sample should be held on the job by the job engineer, or inspector, and could be used as a comparative sample to check shipments as they arrive. In this manner, it is believed no serious divergence in the quality or sizing of stone would occur unnoticed.

By furnishing material engineers with a small station wagon, samples could be easily taken into the central laboratory or to the express stations. In case of failure of samples to meet tests, all shipments could still be held at the point of destination before unloading.

It might, also, be well to shift these materials engineers from time to time to various other quarries. In this manner no operating fault should escape, nor would there be any attempt to bribe the materials engineer.

The additional cost to the large consumers would be more than paid for by the guarantee of quality. Perhaps even a saving might occur to the consumer because of the inspection at the quarry, affording less testing duplication. For instance, there are many times when several shipments, containing the same type and size of stone, are being shipped from the same quarry to various points in the state. In a case like this two or three samples taken each week from the bin chute at the quarry could easily be substituted for daily or even bi-weekly samples from several different cars at many destination points.

A list of approved sources of supply for various purposes should be kept by the testing department. Should any contractor, purchaser, or producer wish to obtain crushed stone from other sources than those approved, such sources should be examined by an experienced and competent materials engineer who should have considerable knowledge of geology, testing, and specifications of crushed stone.

Approval of the ledge, however, would not guarantee final acceptance of the crushed product. It would still have to meet specifications and tests at the time of shipment, the same as other approved sources.

For Cement Chemists

JUST RECEIVED from our English contemporary, Concrete Publications, Ltd., London, a review copy of "Chemists' and Works Managers' Handbook," by W. Watson and Q. L. Craddock. The publishers say the purpose is to provide in one book as much as possible of the data and information of every-day use to those engaged in the manufacture, chemistry and testing of portland cement." They have done an admirable job, particularly for those who try to keep posted on foreign developments; for them the conversion tables alone are worth the price of the book ($3 in U. S. money).

The book consists largely of tables, so perhaps a little of the contents can be gained from the following incomplete list:

Comparison of portland cement specifications of the world; fineness, chemical composition, setting time, soundness, tensile and compressive strengths. The American specifications tabulated are those of 1936, which are now considerably out of date.

Comparison of standard sieves used throughout the world. These are particularly helpful in comparing values given in foreign literature with American standards.

Weights and volumes of slurry at various water contents and loss-on-ignition values.

Capacity of cylindrical slurry tanks per inch of depth.

Internal volumes of kilns per foot run.

Gas volumes per ton of clinker and gas velocities in rotary kilns; other kiln data.

Volumes and weights of gases from kilns; density of kiln gases.

Heat balance formulas and tables.

Conversion tables, pressure, density, heat, work, energy, calorific values, specific surface, flow of gases, metric-English, English-metric, etc.

Physical tables, properties of the more important elements, chemical compounds, alloys, acids, water vapor, heat units, etc.

Chemical tables, atomic weights.

Manual of chemical and physical testing procedure.

The reader may judge from the foregoing that the authors have assembled and compiled a really handy reference book.

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[1] After these cars are sampled, the samples are forwarded to the testing laboratory. Considering the time spent in transportation, the time in testing, the time in making out reports, and the time in mailing the results back to the job, it takes from three to seven days to learn the results of the test. The average time is generally five days.

[2] ROCK PRODUCTS, November, 1939, p. 42.

Stepping Up the Efficiency of Wood-Fired Kilns

Design ventilator-type hood for stack to increase draft. Also suggestions for starting kilns without the use of wood

By VICTOR J. AZBE

AN INTERESTING LETTER has been received from Wolf G. Bauer of the Union Lime Co., Republic, Wash., which describes a device which he has developed to increase the draft on the stack of a natural draft wood-fired kiln having 30-sq. ft. of shaft area. The production is 13 tons of high calcium lime. He writes as follows:

"The kiln is located in a valley through which steady winds push most of the year. I have turned this to advantage by placing a large sheet-iron elbow, shaped like the ventilator hoods on board ships, on rollers on top of a 20-ft. stack of 4-ft. diameter. This elbow or wind hood is pivoted by means of a winch from the bunker, the suction created boosting the draft from its average 0.1 in. to 0.4 in. in medium winds.

"We draw heavier on windy days, and boost the output considerably. To heighten the kiln for gas firing, we have a simple inclined belt conveyor charging rock into the stack from the bunker, adding about 15 ft. of useful height without changing the kiln. This added over 15 tons of rock to the preheating zone of the kiln.

"The cooler is about 11 ft. deep, holding about eight tons of lime. Lime is drawn every hour by means of a sliding cone or bell under the cooler. I designed this discharging device to allow the cooler to clear itself of fines after each draw, as our lime tends to spall and hinder the entrance of combustion air.

"This gate stops the draw automatically by its own weight and is very easy to operate. The pipe, which acts as a guide for the sleeve to which the bell is welded, also introduces some air, and prevents arching in the cone of the cooler."

Kilns are always started with wood and in some cases tremendous quantities are used. When kilns are of natural draft type, wood may be necessary as the cold stone in the kiln tends to create a down draft, but when they are induced draft equipped, then wood is not at all necessary, and particularly not when gas is used.

Recently several kilns went into operation in Ohio and Ontario, both producer gas installations, and no wood at all was used in the kilns, and the start was quite satisfactory with no difficulties being experienced with ignition of the gas.

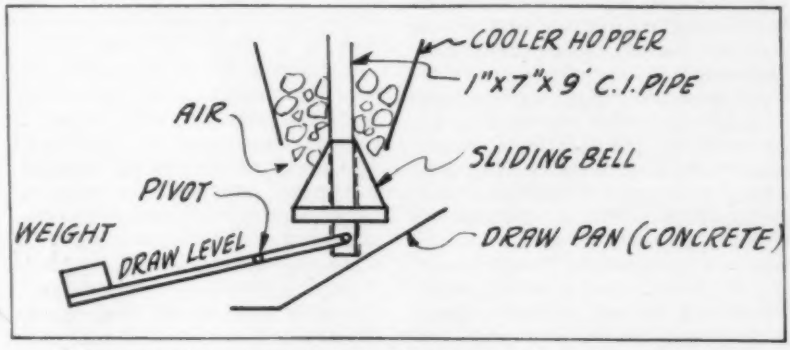
This, of course, means also that kilns can be allowed to cool completely and from this state be started again.

In the East there are two exceptionally large kilns. When starting one of the kilns, usually 35 cords of wood were first introduced with stone on top of this wood. When the other kiln went into operation a step from 35 cords to no wood was considered too radical so only five cords were put in. All of the wood which was not used for this start is shown in the illustration, and makes a respectable wood lot pile. Used by Mr. Bauer it would make 110 tons of lime.

LIME FORUM

Mr. Azbe, consulting engineer, is a contributing and consulting editor of ROCK PRODUCTS. He will be glad to receive inquiries from his readers, and will answer these direct or through the columns of this Forum.

Amount of wood saved by changing over to induced draft



Sliding cone which allows cooler to clear itself of fines after each draw

Alkalies in Portland Cements

Accelerated laboratory tests showing presence of alkalies in cement have little bearing on performance of concrete over long period of years

By ALTON J. BLANK*

DURING THE PAST YEAR conversation having to do with cements has included mention of a number of components that are present in most cements, but which had heretofore been considered as unimportant. On every tongue, one hears the word "Alkali" mentioned, and associated with this word are those of "Total Alkali" which includes the oxides of sodium (Na_2O) and potassium (K_2O). Another term that has recently crept in is potassium sulfate (K_2SO_4). Yet, these oxides have been present in portland cements for years, to a lesser amount in some cements, and higher amounts in others, depending upon the raw materials used, and the clinkering of them in the kiln.

Several articles treating with the alkali question have made their appearance in several of the trade journals, and the conclusions reached are to the end that the alkalis present in portland cements contribute very definitely to the disintegration of concrete under given or varied conditions.

California Situation Not Typical

It is of interest to note that the disintegration of certain portland cement highways in California, in 1938, resulted in 1940 in the California State Division of Highways writing its own specification to the effect that portland cements thereafter used in certain areas of California in highway construction must not contain sodium and potassium oxides (considered as total alkali content) in excess of 0.5 percent.

It may be of further interest to note in passing, that as far back as 1937, when work was started on the Angostura Dam, in the State of Sonora, Mexico, which is still under construction, a specification covering all cement going into this dam limited the total alkali content to a maximum of 0.8 percent.

Some 10 or 15 years ago, in order to have something special to offer their clients in way of increased quality, competing cement concerns began increasing the strength of their products. To accomplish this it was necessary to grind raw materials finer, increase the lime content, burn the clinker more uniformly and harder, and then grind the resulting clinker to a higher degree of fineness than had theretofore been found necessary. As a result of this, the old established cement companies, as well as the newer ones, went to larger units in their plants. Increasing the lime content of the cements, directly increased the theoretical tricalcium-silicate content, and brought about cements which had high heats of hydration. Some of these cements also showed high degrees of expansion when tested in the autoclave. Others showed a considerable retrogression in strength with age.

Progress created ills. To decrease delayed expansion in cement, air quenching of clinker was developed and benefitted this condition in some cements. Then came the magnesia scare, and for this quick cooling of clinker was also claimed as a cure-all. Then the industry learned that screen finenesses on raw and finished cement products did not tell the interested party anything, and along came surface area, microns and other new words to the trade. Free lime and magnesia came under the usual scrutiny, and sugar and alkalinity tests, bleeding, and alternate freezing and thawing tests made their appearance. Some specifications made their appearance in which the temperature at which clinkering occurred in the kiln had to be within certain limits. As a result, some raw mixtures that had theretofore clinkered very nicely at a temperature of around 2350 deg. F., had to be clinkered at a temperature of around 2800 deg. F. or the resulting cement would be rejected for use in certain types of concrete constructions.

And now along has come the alkali subject and great importance is being attached to it by cement producers far and wide. Alkalis are no new constituent of portland cements. They have always been present in them, probably in higher content at present than 10 or 15 years ago, and for which there are probably a goodly number of reasons, one of which has to do with kilns.

Length of Kiln Affects Alkali Content

As short a time ago as 1920 a 150 ft. kiln in the cement industry was considered of respectable size. At that time there were a great many kilns whose length ranged considerably under 150 ft. However, in recent years, few if any kilns as short as 150 ft. (excepting the Lepol kiln) have been installed, and lengths up to 450 ft. are now becoming common. A casual glance through the 1941 cement directories, in which about 400 kilns are listed in the United States (some companies do not list the size and number of their kilns) about 68 percent of the total are 150 ft. in length and under, but that does not necessarily imply that 68 percent of the portland cement produced comes from the 150 ft. length kilns and under.

It is generally known that most clays, shales and other siliceous and argillaceous materials used as raw materials for cement making purposes, contain alkalies. The combined content of sodium and potassium may range from a few tenths of one per cent, to as much as four or five percent. Some limestones also contain alkalies in fractions of a per cent.

It is further known that hard burning of the clinker in the kiln, volatilizes these alkalies to some extent. It has heretofore been generally considered that, with a given raw mixture, the higher the back-end temperatures in the kiln, the lower the alkali content in the clinkered product. If this is the correct answer, then it can readily be understood why, and after the same hardness of burning, the clinker produced from a given raw mixture in a 60 ft. length kiln, where

* Executive vice-president in charge of operations, Cementos Atoyac, S. A., Puebla, Pue., Mexico.

back-end temperatures may range around or above 2000 deg. F., should contain a lower alkali amount, than would a clinker produced from the same raw mixture in a kiln 450 ft. long, where back-end temperatures may range as low as 300 deg. F. If such is the case, and alkalies present in any excessive amount in portland cement are definitely considered as having a detrimental effect upon quality, then it can be understood why a number of cement manufacturers using the longer kilns, are at present adding calcium chloride and other chemicals to their standard raw mixtures for the purpose of affecting easier volatilization of the alkalies at the lower temperatures prevailing in the back end of their long kilns.

The burning temperature in the kiln, together with the back-end temperature of the kiln, also influences the amounts of sulphates that may be present in the clinker. There are such things in cements as sulphates not only of sodium and potassium, but of magnesia, calcium, and, less frequently, iron and alumina. The fact that raw materials may have no sulphur present, in any of its forms, does not necessarily guarantee that the burnt clinker will be likewise free. Fuels, such as coal and oil, contain sulphur in quantity, which is absorbed by the raw materials in their passage through the kiln.

Sulphates present in some cements cause efflorescence, staining, and discoloration in concrete. They may also cause expansion and the disintegration of concrete. If sulphates of magnesium and calcium may cause these things, then it stands to reason that sulphates of sodium and potassium may have a like effect on concrete.

Some years ago when the free lime subject was at the fore, it was generally accepted that cements with free lime contents of several per cent or more, were definitely unsound, while cements containing free lime in amounts of one-half of one percent, and under, were sound. Yet, cements having more than two percent of free lime were quite often found to be sound, while other cements having but a few tenths of one percent of free lime were often found to be unsound, if the boil test, the Le Chatelier, or the autoclave tests are to be considered as tests which determine the soundness of cement. None of these tests check particularly well with cold water 28-day storage of pats, or the results obtained in the field over a period of months or years.

In the first 100 years of portland cement manufacture, during which time probably 75 percent of all the cement produced was of an unsound nature, by reason of one laboratory test or another, there was probably considerably less disintegration of concrete than during the past 20 years when not more than 7 percent of all cement produced was held to be unsound by laboratory test.

CHEMIST'S CORNER

Problems and practices of the chemists in the industry are discussed on these pages. Contributions and comments are invited.

Laboratory Tests Not Conclusive

Accelerated laboratory tests, while serving as indications as to how a cement will perform at an early age, has little bearing on the performance of the cement in concrete two, or eight or 20 years later. The writer has observed, over a period of 15 years, the action of cement, pronounced decidedly unsound (in fact pats boiled at a temperature of 94 deg. C. were found within a half hour in the form of sand at the bottom of the pat boiler) which had been shipped prior to the release of laboratory tests and had already been used on the job. This concrete to date shows no sign of having anything seriously wrong with it. On the other hand, cements produced at about the same time, and passing the then portland cement specifications by a wide and safe margin, have at a much earlier date disintegrated completely.

From these and other experiences it would appear that present cement specifications do not have a great deal to offer to the user of the cement. Were all portland cements produced from the same raw materials, ground in the same type of mills to the same fineness, and burned in the same sized kilns to the same degree of hardness, and with the same kind of fuel, and the finished product ground with the same kind of gypsum to the same fineness, a more or less standard product might result from one cement plant to the other. So long as a variety of raw materials may be used, and be subjected to different grinding and kiln procedures, using different types of fuel, and the clinker be ground to different finenesses with different kinds of gypsum, plus grinding aids of different composition and effects, then it is hard to see how it will be possible for one specification to cover portland cement.

Yet, as matters now stand, a slow and a quick setting cement; a slow and an early hardening cement; a low initial strength and a high initial strength cement; a cement that may develop contraction or expansion of an excessive nature; a cement that may disintegrate in a year, or twenty years, or may show no signs of disintegration at all; a black cement, or a brown or grey or a cream colored cement, even a white cement, all are portland cements so long as they pass certain specifications. They are the results of certain tests, all made in the laboratory on the product after it is a finished product, whose composition, quality, etc., at that long last can no longer be altered or corrected, good or bad that it may develop in concrete after a period of years.

The average portland cement contains about 0.8 percent of total alkalies. With one or two exceptions, there is no definite proof that a cement containing 1.5 percent of total alkalis is inferior to a cement which contains only 0.3 percent total alkalis, nor that a cement containing 1.25 percent of potassium oxide and 0.25 percent of sodium oxide is inferior to a cement containing 0.25 percent potassium oxide and 1.25 percent sodium oxide. There are too many other factors that must be taken into consideration. Cement chemists have lost considerable sleep in trying to produce the kind of cement that the company sales manager has promised the trade. He has seen the free lime scare come and go; the delayed expansion that only the autoclave is supposed to show up; the alternate freezing and thawing test which is intended to prove something or other, and this test and the other test that is supposed to prove or disprove the quality of his cement, and finally when he thought he had caught up with matters, the alkali question is thrown into his department and he now has several years work to try and prove or disprove that alkalies bear any influence upon the cement he is making, or the concrete into which it will eventually find its way.

By the time the alkali question, (as with other questions that have been raised in recent years) has definitely been disposed of, to the entire satisfaction of, probably, about 50 percent of the people who have raised the question, and require an answer, there will be other questions. Calcium sulfide in cements is an interesting subject. Why neat portland cement briquettes or other test pieces, show-

ing 0.2 percent insoluble residue at early age, should show two and three percent several years later, is also an interesting subject, and may have some influence on one thing or another. There are a lot of interesting constitutents, all combined, which compose portland cements, and after each one has been torn apart and put back together, new constituents that have always been present, will be discovered, and investigated.

Autoclave Expansion Experiments

By H. H. VAUGHAN*

IN THE ARTICLE ON EXPANSION in the Autoclave Caused by Magnesia, published in ROCK PRODUCTS, April, 1940, pp. 48-50, there were certain errors and omissions that require rectification.

In Fig. 3 the lower part of the description should read:—"Curves are calculated as follows: Let R = ratio of area of face of cube to area of the grain, i.e., 100 to $\sqrt[3]{100\ p^2}$. Then fissuring to 1% takes place when $R = 6\sqrt{G}$ and to 5% when $R = 4\sqrt{G}$. It should be noted that as "p" (the percentage of MgO added) increases "R" decreases, thus for any grain size a decrease in the ratio of R ÷ G indicates that a larger addition is required to cause fissuring. In the Table of Linear Ratios and Areas, the headings should read: Grain to Side, Side to Grain, Grain to Face and Face to Grain respectively. In Fig. 4 vertical percentage column is Autoclave Expansion not amount of MgO added.

Since writing this article, further experiments have suggested some additional deductions that are important.

In order to more definitely locate some of the approximated points in Fig. 1, A. G. Fleming, chief chemist, Canada Cement Co., Ltd., carried out some tests with a cement supposedly the same as that previously used but manufactured some weeks later. The composition of this cement, which will be designated as No. 2, was practically the same as the earlier cement (No. 1) but the autoclave expansion was 0.45% in place of 0.18%. To our surprise the results were entirely different, and this called attention to the variation between the results shown in Fig. 1 for Cement No. 1 and those obtained by Mr. Swayze which had so far been ignored. Fig. 5 shows diagramatically the relation between the MgO added and the expansion for certain grain sizes that are common to the three cements marked No. 1, 2 and S.W. and it should be noted that the addition of 1% of 12 μ grains to No. 2 cement caused disintegration. Fig. 5 also includes a table giving the value of the factor R ÷ G, which for No. 1 cement was found to be 6 for 1% expansion and 4 for 5% expansion. It will be seen that this factor, while different for the three cements, is reasonably consistent and that the formula $R = K\ G$, developed for No. 1 cement can be applied to the others with modified values of "k". The results, may, therefore, be conveniently expressed as the additions of 10 μ grains required to produce 1% expansion, representing a point adjacent to that at which fissuring develops and a change takes place in the nature of the expansion. These results shown in the above tabulation include those for No. 1 cement tested under different times and pressures. It also gives the value of "R" for each percentage of MgO added.

Cement	Test Conditions	MgO Addition	"R"
No. 2	300 lbs. for 3 hours	0.74%	26.2
No. 1	300 lbs. for 3 hours	1.24%	18.9
S.W.	300 lbs. for 3 hours	2.4%	12.0
No. 1	300 lbs. for 1 hour	2.0%	13.6
No. 1	200 lbs. for 3 hours	4.1%	8.4

*President, The Canadian Foreign Investment Corp., Ltd., Montreal.

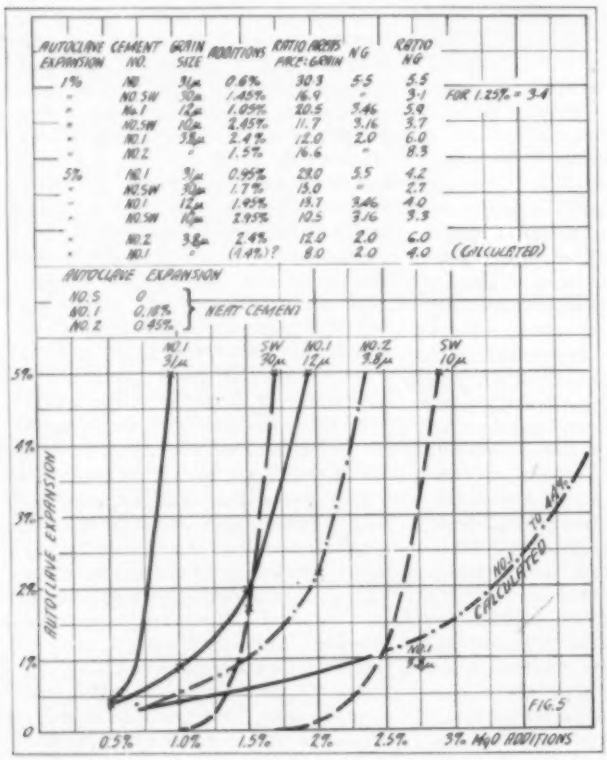


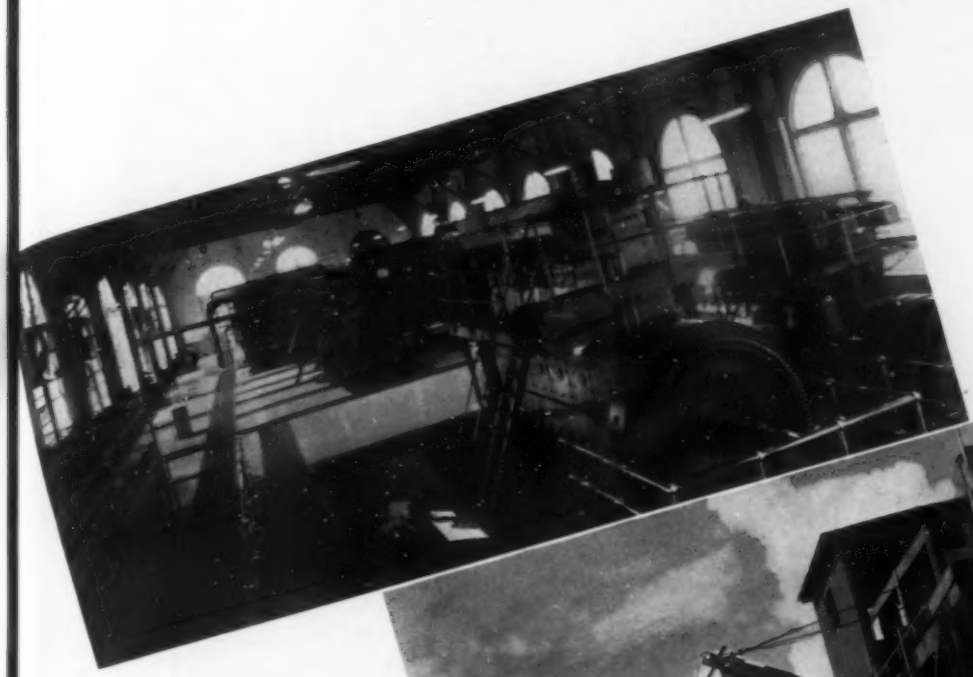
Fig. 5 shows diagrammatically the relation between MgO added and the expansion of certain grain sizes common to three types of cement

What Causes Fissuring

While these results may not be exact, they show a decided difference in the MgO additions required to cause fissuring in the three cements, and a considerable increase when the time or pressure used in the test is reduced. In these respects the behaviour of these cements is qualitatively similar to those in Committee C-1 Report in 1938 and many other tests made with different times and pressures. Fissuring is undoubtedly the initial step in all excessive autoclave expansion, and it occurs when the force exerted by the expansion of the grains exceeds the strength of the section between the grains. The ratio of this area to the area of the grains is a function of the percentage of MgO added and is in-

(Continued on page 90)

Rock Products



DIESEL POWER Section

How W. B. Stocker Sand & Gravel Co. SLASHED POWER COSTS

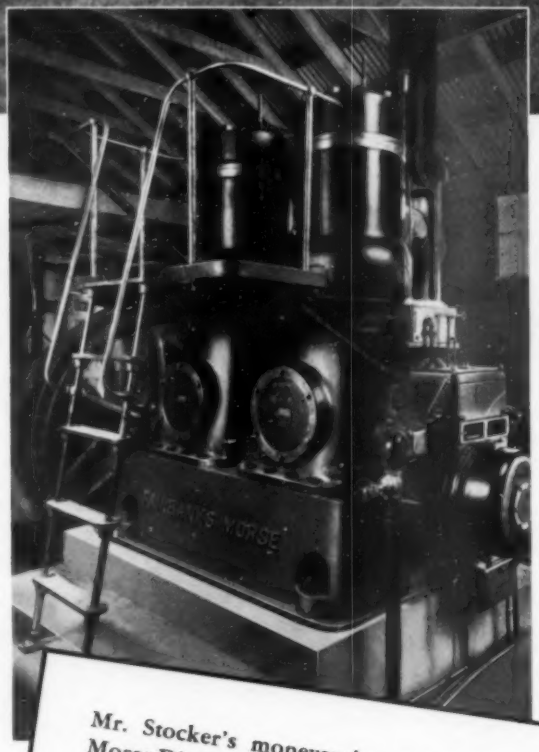
POWER that formerly cost the W. B. Stocker Sand & Gravel Co. $350 per month in fuel and lube oil bills now costs only $43 on the same basis!

A Fairbanks-Morse Diesel is the source of this low-cost power. In Mr. Stocker's new plant at Port Washington, Ohio, this two-cylinder, 150-hp. engine drives a 100-kw. generator which supplies current for individual motors on the hoist, pump, crusher, conveyor, scrubber, and vibrator screen.

Individual gasoline engines powered these units in Mr. Stocker's previous, similar plant. In addition to an average of $350 a month for fuel and oil, they cost unestimated amounts in delayed winter starting, in breakdowns that stopped operations, and in repair bills, to say nothing of causing an $800 fire.

Not a single shutdown has been caused by his F-M Diesel and F-M Motors.

Would savings like Mr. Stocker's interest you? Then get the complete story of F-M Diesel economies. Write Fairbanks, Morse & Co., Dept. F90, 600 S. Michigan Ave., Chicago. Branches and service stations throughout the United States and Canada.



Mr. Stocker's moneysaving Fairbanks-Morse Diesel. The economical operation of this engine is due not only to low fuel cost but also to the *low maintenance cost* that characterizes the two-cycle, slow-speed, heavy-duty F-M Diesels.

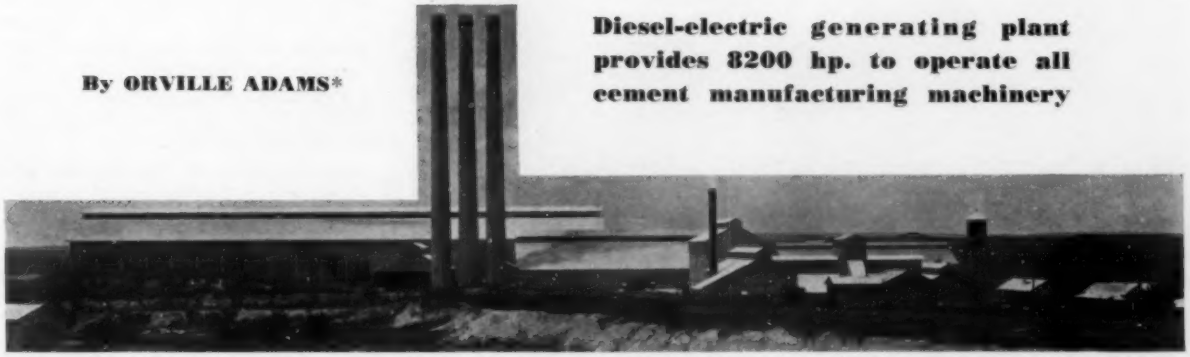
FAIRBANKS·MORSE F-M DIESELS

MOTORS ELECTRICAL MACHINERY RAILROAD EQUIPMENT WASHERS-IRONERS STOKERS
PUMPS FAIRBANKS SCALES WATER SYSTEMS FARM EQUIPMENT AIR CONDITIONERS

An All-Diesel Cement Plant

Diesel-electric generating plant provides 8200 hp. to operate all cement manufacturing machinery

By ORVILLE ADAMS*



View of San Antonio Portland Cement Co. plant which operates the largest Diesel-electric generating system in the industry

ONE OF THE OUTSTANDING industrial applications of the Diesel engine in the Southwest and perhaps the largest Diesel engine installation serving a cement plant is the Diesel-electric generating plant of the San Antonio Portland Cement Co. near San Antonio, Texas. For approximately thirty years, this plant has been making Diesel history. Sometime before 1910, it started with an Allis-Chalmers' engine, and a short time afterwards, the company installed two 500-hp. Rathbun-Jones producer gas engines, which were later converted to the Diesel type with fuel injection to burn crude oil. This type of fuel has been burned ever since, and the plant remains one of the very few which have continued to successfully use this crude oil as it comes from the wells.

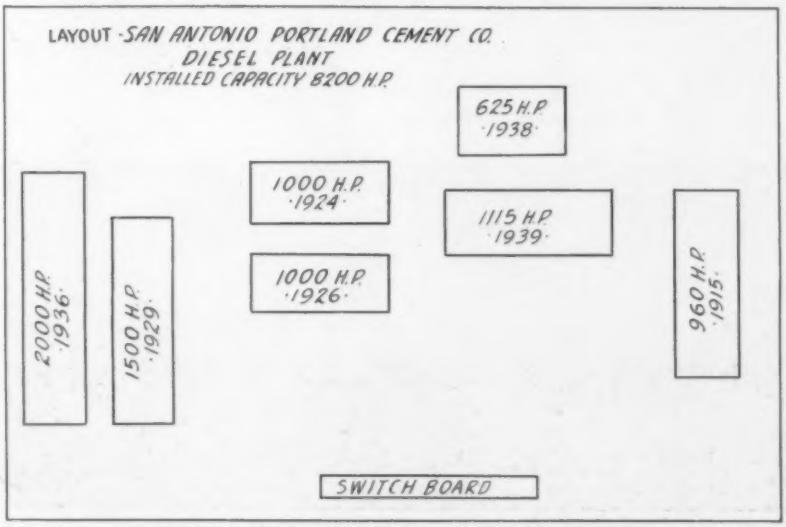
After the gas producer engines were converted to oil burning Diesel types, larger engines were installed from time to time, beginning with a 960-hp. engine in 1915. During the 1920's, 3500-hp. in Diesel engines were added, consisting of two of 1000-hp. and one of 1500-hp. These three units then brought the installed horsepower to above 4000. During the decade just passed three additional engines were installed and some of the older units were dismantled, a total of 3730-hp. having been added during the last four years.

Select Diesel Units of Uniform Size and Design

The total installed capacity of the generating plant is now 8200-hp. With the continued expansion of cement manufacturing facilities to produce more products, additional Diesel power units have been purchased and units will be added when needed.

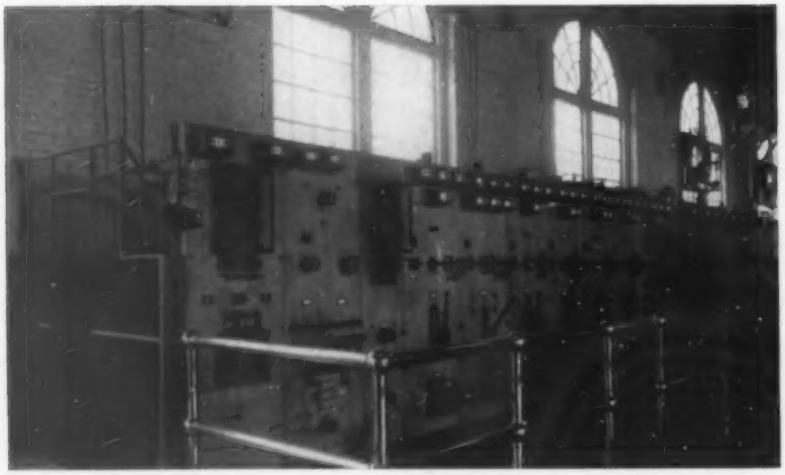
Chief Engineer, J. E. Watkins, with many years experience as an operating man, is responsible for the production and distribution of the power supply. His crew of operating engineers and maintenance men apparently all grew up in this plant, with the result that the operation itself is noteworthy. Mr. Watkins favors the use of several engines of the size installed instead of fewer and larger units, since this makes available ample standby capacity and a sufficient number of units to give the required flexibility for overhaul and maintenance work on engines whenever needed without the necessity for the installation of a large standby capacity. The four-cycle engine for burning crude oil is also favored, as is the use of similar size, type and design of engines, with uniform piston and cylinder sizes, as well as other essential parts. This simplifies operation and maintenance, and in the long run results in much better reliability, and lower overhaul and maintenance cost in an all-year around 24-hr. operation.

While the same type of engine, with one exception has continued to be used in this plant, with little basic change in the design and fundamental principle of operation, the present day plant and engines are more efficient and made more economical and reliable on account of the development and use of several devices and adjuncts now required in Diesel plants. The Diesel engine plant has been kept modern and up to date, in fact, the older units have been modernized by adding essential auxiliary equipment. The latest developments in fuel injection equipment, isochronous governors, air filters, silencers,



Layout of Diesel power units, horse-power, and date of installation

*Widely known authority on Diesel engine and operation, and author of several books on the subject.



Modern switchboard equipment in Diesel-electric power plant

pyrometers, as well as pressure and temperature control devices and other features of advanced Diesel practice have been added. Incorporation of these new features makes the plant as efficient and modern in every respect as one would expect to find in all new plants. Cement production requires most of all reliability and flexibility in the power supply, and the Diesel engines have met this demand for nearly three decades.

Electrical Equipment

No less impressive is the power plant building itself. It is an attractive building ample in size, well lighted and ventilated. Although it houses seven large engines, the switchboard and several auxiliaries, including shops and offices, locker room, storage for supplies and repair parts, there is no crowding, and every machine is amply protected by guard rails and safety devices. Adequate overhead cranes and hoists serve all the machinery and facilitate maintenance work.

Practically all the electric equipment is General Electric type, and is uniform in design and application. Current is generated at 2300 volts, and distributed at needed potential at all parts of the plant and property. Generators have separate exciters of the motor-generator type. The switchboard and switchgear, as well as the switchboard instruments are all General Electric manufacture. The switchboard is known as the dead front type, and the essential instruments include control devices, such as voltage regulators and syncroscope, required for the distribution of large quantities of power in an industrial plant, and the paralelling of several separate prime movers.

Special features and auxiliary equipment include Cune type filters for the straining of the fuel oil before it reaches the pumps used on the last three engines installed. All the fuel is passed through a DeLaval centrifuge before delivery to the day tanks of the various engines, a Schutte-Koerting fuel delivery pump being used for fuel transfer from storage to engine supply tanks. The fuel oil handling system also includes a fuel oil heater to assure easy flow and efficient filtering of the fuel during cool weather.

The usual filtering and reclaiming system of handling the engine lubricating oil is in practice. Lubricating oil, for example, is centrifuged to remove foreign matter, regular Schutte and Koerting oil coolers are used on the late type engines, and a Grissom-Russell lubricating oil reclaimer is employed to remove sludge and colloidal carbon.

This method of filtering and reclaiming the lubricating oil removes all foreign matter, reduces sludge to the minimum, and saves all the lubricating oil, assuring reliable lubrication and reduction in wear on engine working parts. The engines are also equipped with lubricating oil pressure and temperature alarm control devices of the Rathbun-Jones type to assure the maintenance of uninterrupted service at all times.

Cooling System

Arrangement of the air intake and exhaust system and the method of connecting the engines to air ducts and exhaust lines is an outstanding example of good Diesel practice. From the air ducts under the floor, vertical risers connect to the horizontal air intake and exhaust manifolds on the engines. Air filters and exhaust silencers located outside the building are connected to the other end of these ducts. The Coppus air filters and Maxim-silencers are used on the latest installation. The engines installed since 1936 are all so equipped and each has a Woodward isochronous governor of the prime mover type. Pyrometers for checking the exhaust temperature of all engines are used, and comprise both the Alnor and the Brown indicating dial types. These installations include numerous devices and gauges which are assembled as a control unit at the engine on the operating side.

The chief feature of the cooling

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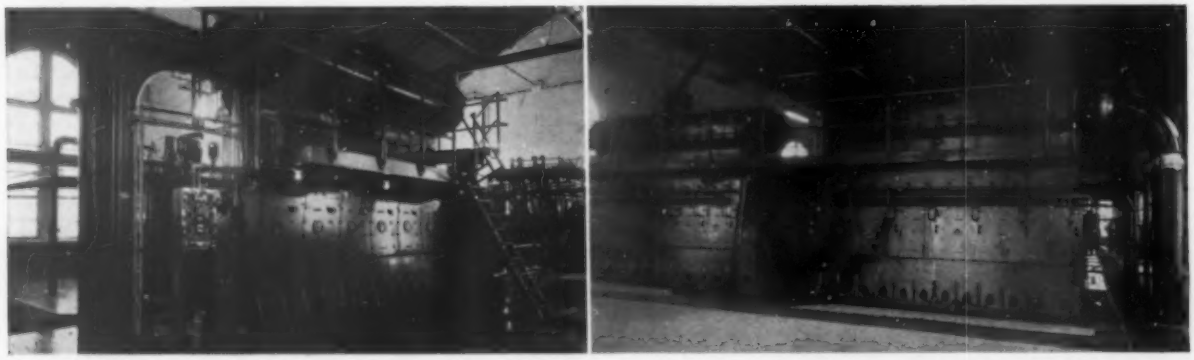


Left: A 1115-hp. Diesel unit installed in 1939. Right: Looking down the main aisle of power plant, showing a 2000-hp. Diesel

Eliminating Dust In the Power Plant

Better results are obtained from Diesels and other power plant machinery if dust is removed

By WILLIAM H. GOTTLIEB

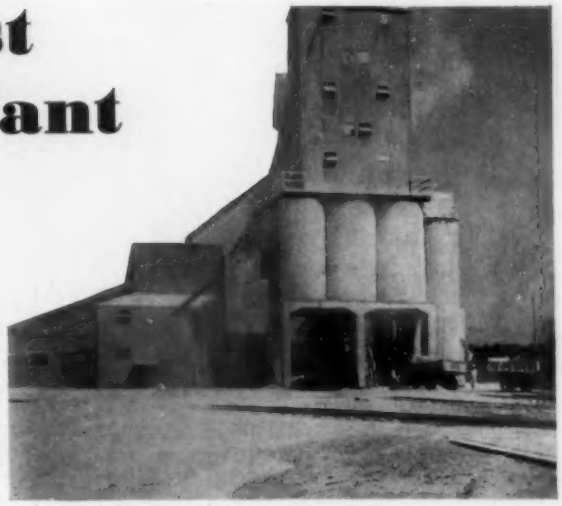


Fig. 1: Dusty conditions surrounding a crushed stone plant from which Diesel power must be protected

TO OBTAIN MAXIMUM LIFE and efficiency from equipment in the rock products industry, machinery must be protected against the entry of abrasive dust.

It has been determined by extensive tests that 1000 cu. ft. of air in the average industrial district contains 0.35 grains of dust and pollution. From my own observations, I should say that the dust in the air around many plants where stone is being crushed is fully a thousand times greater than 0.35 grains per 1000 cu. ft.

Need Air Filtration For Diesels

Dust is a menace to motors and generators for it collects on the coils and prevents normal radiation of heat. There is greater likelihood, then, of overheating and breakdown of insulation. Even more grave is the problem of machines such as engines and compressors which draw in large quantities of air. If a Diesel draws into its cylinders approximately 3 cu. ft. of air per minute per rated horsepower, a 1000-hp. engine operating 5000 hours a year will take in 900,000,000 cu. ft. of air. In our average industrial area, this means that 315,000 grains or about 45 lb. of dirt are carried to the cylinder walls. Under these circumstances, it has been found that filtration of engine air reduced cylinder liner wear by at least 25 percent and, in some cases, as much as 90 percent. Magnify the dust quantities to approximate stone plant conditions and the savings through air filtration become correspondingly large.

Most dust reaches the working parts of an engine in one of two ways. It may be drawn into the cylinders through valves or ports with the air used in combustion. This results directly in deposits on cylinder walls and increase in liner wear. The second mode of entry is by seepage of surrounding air into the frame. On the compression stroke, it is almost inevitable that some air be drawn into the crankcase, and the dust it carries may settle on the bearings.

One of the simplest and most economical expedients, open to the company contemplating installation of new power plant equipment, is the adoption of an engine of the all-enclosed type. With many engines built today, all working parts are within the frame with a tight cover shielding the valve gear. In addition, the engine is fitted with sealing rings in the stuffing boxes and at the ends of the crankshaft. Thus the unit is protected against dust seepage. An installation of this nature has been giving highly satisfactory service for more than two years at the Genessee Stone Products Co., plant at Stafford, New York. Fig. 1 gives a good idea of dust conditions that prevail while stone is being crushed. But the 675-hp. Buckeye Diesel shown in Fig. 2 is successfully shielded from most of the dust. Air for charging the seven cylinders is drawn from the engine room through three filters set in the side of the engine frame.

Some operators defeat the purpose of the engine designers by leaving the cover of the engine frame open so that they can observe the operations of the valves in the cylinder heads. Dust then adheres to the oily surface of the valve push rods and is carried

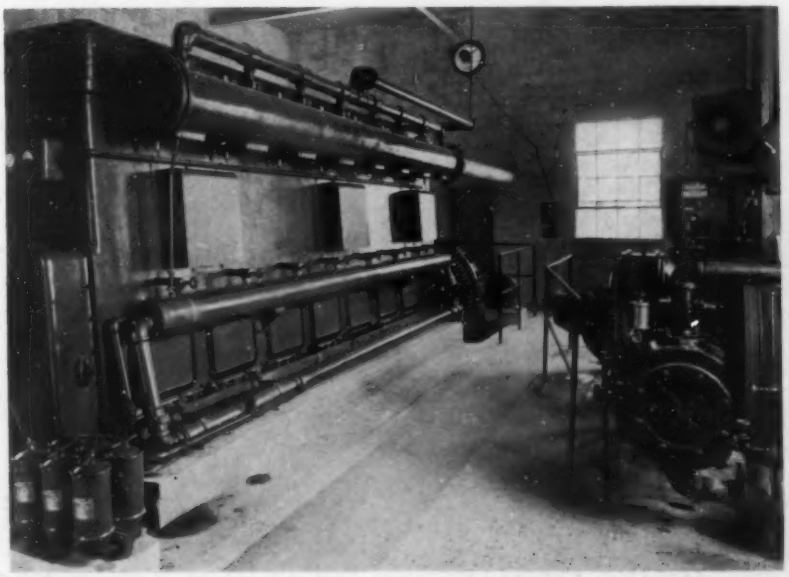


Fig. 2: A 675-hp. Diesel in the Genessee Stone Products Co. plant at Stafford, N. Y., which receives combustion air through three filters

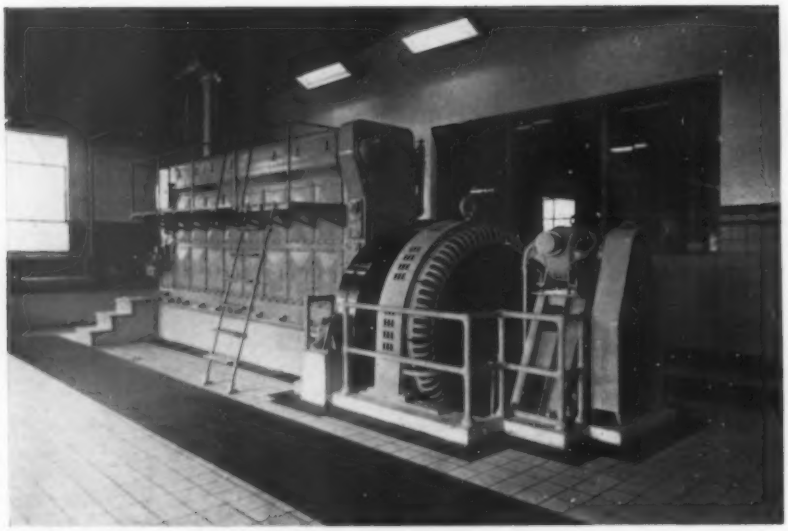


Fig. 3: Dolite Co. filters all air for the 625-hp. Diesel power plant through an oil bath filter

down into the engine to contaminate the lubricating oil. If dependence is to be placed on the dust resistance of the engine design, it is obviously essential to keep the frame sealed except when maintenance work or inspection is necessary.

Many companies deem it advisable to adopt more elaborate precautions against infiltration of dust. They protect against both major sources of contamination by filtering not only combustion air but all the air that enters the engine room. This method not only gives the engines superior protection but also guards the generators and other engine room equipment.

Some Filter All Air Entering Engine Room

A notable example of care and skill in the battle against dust is the plant of the Dolite Co., Gibsonburg, Ohio. Manufacturer of a refractory product for open-hearth operation of steel mills, the plant is located alongside a quarry and rock crushing plant which supplies materials processed in Dolite's rotary kilns. The air in and around the plant is heavily laden with dust, but the engine room is completely isolated and carefully protected. The 625-hp. Superior Diesel is of the enclosed type. The engine and all accessories are grouped in a well-built concrete block room lined with a special white tile. (See Fig. 3.)

Wash and Cool Air For Diesel Plant

All combustion air for the engine is drawn through an Air-Maze oil bath filter outside the plant and reaches the Diesel's intake header through flexible hose. All other air that enters the room must pass through glass fiber filters located outside the plant. To prevent any possible seepage of dust, the ventilating fans keep the entire room under a slight pressure. Fig. 4 shows the power plant exterior with three filters in evidence.

Some engineers have been quite ingenious in devising efficient air purification systems. Near Carlsbad, N. M., the Potash Company of America has a 5500-hp. Diesel plant supplying power for operation of the potash mines. All air for the engine room is drawn by fan through an air box set up against an atmospheric cooling tower. The arrangement is shown in Fig. 5. This serves a triple purpose: the air drawn through the stream of falling water is cleaned of dust; the air is cooled, which is important in this hot climate; and the pull of air through the tower improves the efficiency of the cooling tower.

Dry Air After Washing

Combustion air for the two newest engines, 1500-hp. Nordberg Diesels, passes through a Buffalo air washer (Fig. 6) before reaching the intake headers of the engines. Air, passing through the spray of water in the washer, is cleaned and cooled. The cooling permits the engines to take in a heavier charge of air with each suction stroke, thus improving combustion and increasing power output. Air for the other Diesels, a 400-hp. and a 750-hp. DeLa Vergne, a 600-hp. Worthington, and a 750-hp. Nordberg, is drawn through impingement type filters.

A highly efficient filtration system has been evolved by the Pennington Trap Rock Co., Pennington, Penn., Fig. 7 shows the crusher in action and the seriousness of the dust problem is evident. The ingenuity of the plant engineers has been equal to the test. Air, which is supplied to the two 450-hp. Busch-Sulzer Diesels in the manner shown in Fig. 8, is drawn by engine suction through the atmospheric cooling tower where the water spray performs the initial cleaning. From the tower, the air goes through a duct to an air-house where it is directed down against the stone floor

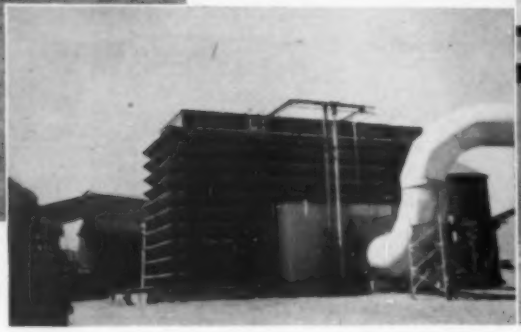


Fig. 4: Above, three filters for Dolite Co. power plant. Fig. 5: Center, air purification system for 5500-hp. Diesel power plant of Potash Co. of America

Fig. 6: Right, combustion air for potash plant is washed and cooled with this equipment

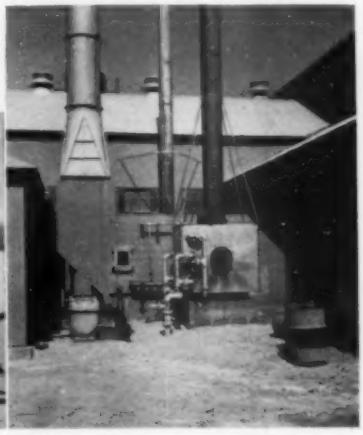


Fig. 7: Dusty conditions at Pennington Trap Rock Co. crushing plant

by two louvres. This contact with the floor drains most of the water from the air. Next, the air, already washed and dried, passes through a set of nine American air filters of the steel fiber type, built into the air-house wall. Finally, the air passes through a 20- x 20-in. galvanized iron duct which branches to the two intake headers.

Engine-room air, too, is cleaned at the Pennington plant. An 11-in. Champion blower delivers filtered air to the room.

Filtration of air both for combustion and for the engine room is not a luxury; it is a good investment. Aside from all other considerations, operators of any one of the plants cited above will testify that precaution against dust means greater power plant dependability, lesser maintenance and repair cost. It may soon be possible economically to banish dust from all departments of the stone industry. Certainly, it now is possible, and economical to take measures against dust in the engine room.

The companies mentioned are typical examples of dust prevention practices followed by the most progressive rock products companies operating Diesel equipment.

All-Diesel Plant

(Continued from page 52)

system is a large reservoir in which is mounted several large cooling towers of the atmospheric type. One of the latest installations has a closed cooling system comprising coils for the soft water, and a tower which distributes raw water cooling to the heat exchanger. A Duro water softener is also included with this closed system to supply make-up water that has been previously softened. The several cooling towers are conventional in design and are usually operated during the hot months to augment the cooling pond evaporation, and together, these afford ample supply of reliable cooling water during the severely hot weather common to this region. An interconnected water circulating system includes Cameron pumps direct-connected to General Electric motors, and constitute the utmost in reliability and flexibility of control of the cooling water supply to all engines. The source of the water is from deep wells on company property.

Such a Diesel power plant comprises a large investment, and many years of experience are involved in building up its efficiency and establishing this type of primer mover in any kind of plant. The experience is equally a factor with the inherent economy of the Diesel engine in the final result.

Unexploded Blasting Caps

COMMENTING on the new edition of "Safety Rules for Quarrymen," recently issued by the National Safety Council, Mr. Brandon, vice-president of Ensign-Bickford Co., manufacturer of blasting or detonating fuse, wrote the National Safety Council as follows (May News Letter of Cement & Quarry Division):

"I have just read with interest the safety rules for quarry men. I would particularly like to call your attention to No. 14, under the head of 'Explosives' on page 5. This rule states: 'Do not attempt to investigate a mis-fire too soon. When fuse and blasting caps are used, at least one hour should be allowed before returning to a mis-fire. In the case of electric blasting caps, at least fifteen minutes should be allowed.'

"That rule was in the various explosives handbooks and other literature, but recently the Institute of Makers of Explosives recommended that whatever length of time is specified as a safe time before returning to a mis-fire, preferably not less than one hour, should apply to both fuse and electric methods of blasting.

"Delayed shots are not due to anything inherent in fuse or in electric blasting caps. Delays have been caused, to our knowledge, by loose crimping of the caps to the fuse. The fuse was pulled from a loosely crimped cap in the loading of the hole, allowing considerable space between the fuse end and the cap, which remained embedded in the explosive. When the fuse spit, it ignited the explosive, which burned until the flame reached the unexploded cap, causing it to detonate.

"A delayed shot was experienced from the use of a weak detonator with an insensitive explosive. The detonator ignited the explosive which burned for approximately ten minutes, at which time it was detonated due to the heat and gas generated by the burning explosive. Delayed shots have been experienced with electric exploders from the same cause. Recently one of the explosives technical men experienced a shot delayed approximately forty minutes where the electrical method of firing was used.

"Owing to experience of this kind, the Institute recommends the delay of an hour or more before returning to a misfire, not specifying whether it was with fuse or with electrics."

T. W. Jones, safety engineer, New Haven Trap Rock Co., New Haven, Conn., apparently is the man who brought Mr. Brandon's attention to the subject.

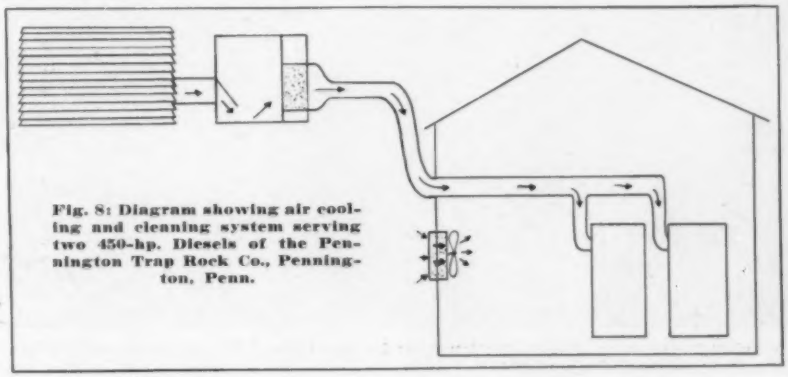


Fig. 8: Diagram showing air cooling and cleaning system serving two 450-hp. Diesels of the Pennington Trap Rock Co., Pennington, Penn.

Phosphate Plants Adopt Flotation Process

THE FLOTATION PROCESS in use by the International Agricultural Corp., Charleston Mining Co., and Armour Fertilizer Works under the patents of the Phosphate Recovery Corp., have enabled all these companies to greatly extend the life of their operations by using much lower grade deposits than could formerly be worked.

Floating aggregates plant in action with bucket line in raised position. Sand loaded on this side and gravel on the other

"Magic City" Modernized

Complete ocean-going aggregates plant operates all equipment by Diesel-electric power. Disc crushers replace old roll crusher

THE "MAGIC CITY," one of the most complete floating aggregates plants in the country, is now being operated by the United States Dredging Corp., New York City, in Port Jefferson Harbor, Long Island, producing sand and gravel for transport to New York City and other seaboard cities.

It was designed by engineers of the Warner Co., Philadelphia, Penn., and built in 1926 by the American Car and Foundry Co., at Wilmington, Del., for the Meteor Transportation and Trading Co., Miami, Fla.

When completed, the dredge was towed all the way to Miami, and put to work digging coral rock from the bottom of Biscayne Bay as part of a harbor deepening project. The rock was crushed and screened for the Miami building market. To successfully withstand ocean storms enroute, the hull was built to special design. The dredge as originally built was described in ROCK PRODUCTS, December 11, 1926, pp. 26-33.

In 1931, the Warner Co. leased the "Magic City" and took her back north to work in the Delaware river territory of the company, digging and processing sand and gravel. She was first reconditioned and changed to adapt her to the new operating conditions. In 1935, the dredge was purchased by the United States Dredging Corp., and was returned to salt water operation after considerable rebuilding. The latter company was "depression-born," but built up a business in the New York City area, exceeding 1,000,000 cu. yd. of sand and gravel in 1938.

Methods of producing aggregates have been changed but some of the original equipment has been retained. When built back in 1926 it was fitted out to dig, crush and screen materials into their finished form and to develop its own electrical power by Diesel engine. Equipment included a 12-in. water pump for washing aggregates, auxiliary pumps, emergency Diesel- and gas-powered generators, living quarters for a crew of about 20 men, a galley and complete ma-

Left: Gravel barge being loaded by means of shuttle conveyor. Right: Sectional sand chute to load barge. Note sand elevator aboard dredge boat

chine shop with drill press, shaper, lathe, etc.

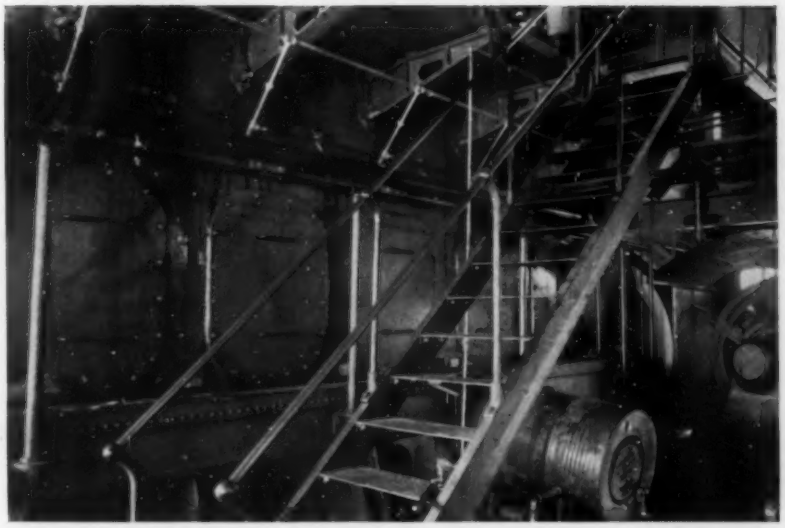
Operating Methods

The hull measures 10- x 50- x 160-ft., of wood construction, with seven longitudinal bulkheads, Special steel trusses, placed 10 ft. apart the entire length of the hull, were tied in with bracing to give it the necessary sturdiness for its first assignment. Designed capacity was for 400 tons per hour of crushed and graded coral rock. The main digging ladder had 65 "egg shell" type buckets of 6-2/3 cu. ft. capacity each, which discharged at the rate of 22 per minute to a dumping table. Each bucket had two manganese steel teeth welded and riveted to its lip to cut into the hard rock.

First reduction was through a 36- x 30-in. McLanahan and Stone single-roll crusher equipped with a magnetic clutch and rope-driven by the main Diesel engine, which was a 500-hp. Worthington. The crusher discharged into a pit or well, and an inboard bucket line with ⅝-cu. yd. buckets elevated the material to a single 7- x 30-ft. Traylor revolving screen with a 10-ft. diameter dust jacket, 18 ft. in length, to separate out two grades of sand. The fines were piped into three bowl sand washers which discharged directly into barges, with the overflows entering a settling well.

Two Disc Crushers Replace Roll Crusher

Coarse graded material was loaded into barges by shuttle conveyor and oversize put through a 24- x 48-in. double-roll crusher. A 30-in. belt conveyed its discharge back to be re-elevated to the screen. The crushers were both driven by rope-drive and line shaft off the Diesel engine, which also drove an electric generator to develop power for individual drives on auxiliary equipment.



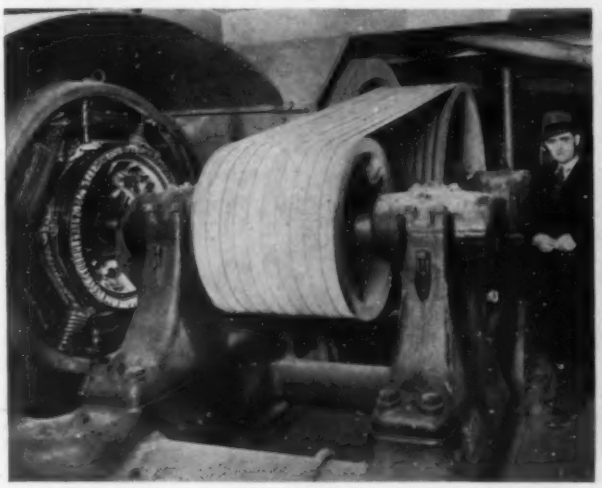
Main power unit is a 500-hp. Diesel engine driving a generator through V-belt

After its return trip north, the secondary roll crusher was replaced by two 48-in. Symons disc crushers. Then the sand classifiers, which projected out over one side of the dredge, were displaced in favor of a sand elevator, which is in effect a tank for settling the sand and a continuous bucket elevator for lifting the sand into the top of the barge-loading chute. Later, under the new ownership, a second elevator of this type was added to double the sand loading out capacity. The tanks are of high carbon steel plate.

The original high carbon steel buckets have been replaced by larger ones, 7½-cu. ft., of Tisco manganese steel with renewable Tisco digging lips. The digging line now has 63 buckets. The inboard bucket line is of high carbon steel with manganese steel lips. Nickel steel plates and wear liners have been installed on the digging boom and chrome-vanadium bucket pins replaced chrome nickel pins. The crushers were practically rebuilt before the dredge went into service off Long Island.

The main Diesel engine is a slow-speed, air injection type Worthington of 500 hp., which in addition to driving the crushing equipment was driving a 250-kw. electric generator through a chain drive. This was a shock drive and the chain repeatedly broke so the drive was changed over to Gates Vulco V-belt. The resiliency of the V-belt enabled the absorption of shocks transmitted from the engine to the generator and has eliminated breakdowns.

In operation, generally three or



Left: L. Miguez, Captain of the "Magic City", standing beside v-belt generator drive. Right: One of the two disc crushers for secondary reduction

four barges of 650 cu. yd. average capacity are filled at once, with two towboats at the dredge to tow full barges out of Port Jefferson harbor for pickup by towboats and to return the empties. The harbor boats are the Setauket and Barrette, powered by 60-hp. and 180-hp. Fairbanks, Morse Diesel engines. Two towboats are used for continual service on the long hauls. The Peter C. Gallagher is a steam tug of 800-hp. and the John Murray has an 805-hp. Fairbanks, Morse Diesel.

United States Dredging Corp., is affiliated with Gallagher Bros. Sand and Gravel Corp., New York, a name that has been prominent in the industry for over 85 years. Officers of the company are J. Murray Gallagher, president; James F. Murphy, vice-president; and Peter C. Gallagher, secretary-treasurer. Edward J. Leifheit is general superintendent and chief engineer; H. F. Bade, chief Diesel engineer and marine superintendent; C. H. Stanley, purchasing agent; S. V. Coles, sales manager; and L. Miguez, Captain of the "Magic City."

Sues for Quarry Property

National Lime and Stone Co., Findlay, Ohio, has been sued to set aside a title which the company obtained from the Marion Sand and Gravel Co. on certain tracts of land in and near Richmond, Ohio, sold to the Marion Sand and Gravel Co. in 1929. It is claimed that provisions of the original sale were such that if the purchaser failed to operate on the land for three years it was to revert to the original owner. The plaintiff states that this land has not been operated since October, 1937.

U. S. G. Award

United States Gypsum Co., Greenville, Miss., plant has been awarded the company's grand award as being outstanding among its 52 plants. The award is based upon safety, quality of product service and general contribution to the company as a whole.

Portable crushed stone plant which has been converted for permanent operation

Taking Off the Wheels

Convert portable crushed stone units into a permanent plant

Increasing demand for agricultural limestone and road materials led Keller & Sons, Eureka, Ill., to construct a crushed stone plant just south of Pontiac, Ill. For a number of years the company has operated a sand and gravel plant near Eureka and also a concrete products plant.

As a nucleus for the crushing plant, an Iowa Manufacturing Co. portable unit was obtained. The 15- x 36-in. Cedarapids jaw crusher on this portable unit was removed and mounted on a separate concrete block foundation as a primary crusher. A 70-hp. Climax gasoline engine drives the crusher through a flat belt. This engine uses about 3 gal. of gasoline per hour.

Throughs from this crusher are elevated by belt conveyor, 75-ft. centers, to a surge bin of 50 tons capacity. Material drops from the surge bin into a 20- x 24-in. Gruendler hammermill with a capacity of 25 tons an hour when making agstone and from 40 to 50 tons when road stone is produced. The hammermill is mounted on one end of the portable unit's chassis frame and is belt-driven from a 100-hp. Buda Diesel engine mounted at the other end of the chassis. About 3½ gal. per hour fuel oil is required to operate the Diesel engine.

Hammermill throughs are elevated by a belt conveyor, 60-ft. centers, to the top of the screening plant. The material coming from the Gruendler hammermill is either screened for the separation of agricultural limestone from road construction aggregate or all of it may be converted to agstone. The truck loading bin, located below the screen, holds about 90 tons.

It will be noticed that the screening plant and bins are located in a timber structure mounted on two concrete block piers with sufficient clear-

(Continued on page 61)

Left: Primary jaw crusher unit driven by 70-hp. gasoline engine. Center: Hammermill making agstone is belt driven from 100-hp. Diesel engine. Right:: Diesel engine is mounted on portable crushing unit frame

One of the large Diesel-powered tractor, semi-trailer units entering mine. Each unit hauls 13-ton loads of stone

Operate Diesels In Mine

Cut hauling costs from mine and quarry into mill bins nearly one-half by the use of Diesel trucks

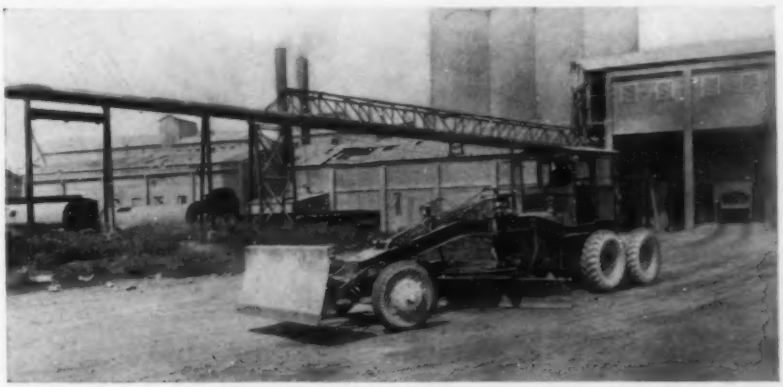
By **BROR NORDBERG**

DIESEL-POWERED SEMI-TRAILER TRUCKS have displaced a tramway system for delivering stone from the mines and quarry to the crushing plant of Medusa Portland Cement Co. at Wampum, Penn. The result has been a decided saving in costs and better all around operating efficiency.

A year of operation, during which time each of three trucks averaged from 12,000 to 13,000 miles of service over a comparatively short hauling range, has brought about a reduction in the cost of getting the stone into the bins from 70c to 38c per ton. Savings are attributed to a lower blasting cost since the trucks can handle larger stone than in the tramway buckets, to the low maintenance of the new equipment, and to the elimination of a far less efficient system.

With the old tramway, 38 one-ton buckets continuously fed stone into an elevated primary crusher at the plant. This haulage system had been in operation since about 1905. Within the mines, which are located in the side of a hill at a higher elevation than the plant and about ¾ mile from it, four coke-fired locomotives and industrial cars were needed to get the stone to the tramway, which explains in part the savings in operating costs.

Haulage equipment now in operation consists of three White trucks powered by Hercules Diesel engines, having a rating of 83 hp. when turning at 2500 r.p.m. A 13 to 15-ton payload carried in each semi-trailer is dumped into a 30-in. Allis-Chalmers gyratory crusher by a Wood hydraulic hoist. With the primary crusher at grade, crushing equipment had to be revamped to accommodate trucks. Each carrier is equipped with Bendix Westinghouse air brakes on the trailer and the service tractor.



Road maintenance equipment purchased by cement company to keep roads from mill to mine and quarry in good shape. Good roads are an important factor in keeping down truck operating costs

Operate Diesels in Mine

Two units operate in the mine and the third outside the mine in an open quarry, operations being scheduled to haul approximately 50 percent of the rock from each source. Rock from one source is a higher grade limestone than the other. The truck hauling quarried rock handles 15 tons and makes a round trip in 15 minutes while the others haul 13 tons and make a circuit in 30 minutes. Limitations in the mine ceiling limit the loading of the latter trucks. Average length of haul is ¾ mile for the quarry truck and 1¼ mile for those operating within the mine.

Experience has been that the building of a good roadbed and regularly maintaining it in first class condition is of utmost importance in getting the most out of equipment which must withstand such heavy service. It is an absolute necessity in the case of the tires.

Build New Road to Mine and Cut Down Grades

A new entrance was made into the mine and a new floor laid, using stone screenings and chips to build a smooth, durable roadbed within the mine; the road followed the bed of the industrial trackage system torn out. Practically all the hauling dis-

Pneumatically lifted runway, which is raised after trucks pass over, to permit end-dumping. It is a safe means of having one-way through traffic without changing surrounding equipment

tance is downhill and the road crosses Pennsylvania State route 18 over a company-owned bridge. A 30-ft. bluff had to be cut down at one location and considerable fill was needed preliminary to building the road. One stretch now has a 13 percent grade which will be reduced to about 8 percent.

In operation, the haul when loaded is all downgrade, using the engine in fifth gear to brake the truck. The return trip, empty, is all uphill in second gear. When loaded, the trucks attain speeds up to 25 m.p.h. as they approach the crushing plant. Fifteen loads are made in an 8-hr. day by the trucks in the mines, the principal delay being in loading and unloading time, and the plant requirement is 900 to 915 tons to be delivered and crushed in 8 hr.

A ceiling of 16 to 18 ft. is maintained in the mine, which is laid out for the conventional room and pillar mining method. Loading is done, both in and outside the mine, by 1¼-cu. yd. shovels and the top size stone hauled is 30-in. to be taken by a 30-in. gyratory crusher which replaces a similar 20-in. type. Blasting holes are spaced wider apart and much of the secondary shooting is dispensed with, since the new transportation system can accommodate larger stone.

Hauling schedules are planned with exactness to maintain a continuous supply of stone in the crusher. A delay of a minute or two for each truck at each terminus would add up to a loss of two loads for that truck in one day.

Precision performance such as this depends for its continuity on the elimination of all controllable causes of failure by keeping roadways in shape and by regular checkup of the mechanical equipment. From the start, the company has had in operation a heavy duty Galion road maintenance machine, semi-Diesel powered, that is equipped with a grading blade, bulldozer blade and scarifier. In dry weather this machine goes over the entire roadway twice a week and in wet weather it is operated every day, if necessary.

For this type of service where a loaded truck weighs 26 tons, experience has shown that a good crushed stone road is better than one that has been surface treated with an asphalt base oil. This type of surface, with a 1-in. penetration, was tried, but was found very difficult to grade when once it became pitted, and it would not hold its surface under the heavy loads. Pitting would have to be cut out entirely to rebuild the surface.

Truck Maintenance

Each truck is greased by a night mechanic twice a week as a regular routine. Oil filters are cleaned once a week and the oil is changed every two weeks, or at about 500 miles. Tire inflation is checked twice a week, and is kept at 65 p.s.i. pressure as contrasted to the 75 p.s.i. manufacturer's recommendations. This is just an added precaution to guard against premature cutting and bruising from sharp stones and sudden impacts. Each truck has ten tires, including 9.75 x 20 Firestone Excavator type tires on the drive wheels for more traction and 10.50 x 20 standard road tires.

Under winter operating conditions, brakes are removed from the front wheels of the tractor to guard against jack-knifing on slippery roads. At temperatures of 40 deg. F. or less, the engines are started by removing the air cleaners and inserting a lighted torch. Operations are started after an idling period of five minutes which raises the engine temperature to about 120 deg. F.

As the trucks are end-dump type, a special runway was built over the primary crusher, open just at the crusher mantel. Immediately after a truck passes over the runway, it is raised at the far end by a pneumatic device, which allows time for the truck to dump and the necessary barring down of the stone before dropping the runway for the next load. With this system, the truck does not have to back up to the crusher.

Safety Precautions Against CO

Particular precautions are taken in the mines near the shovels to guard against carbon monoxide gas. The mine is well ventilated and meets the State requirement for a continuous circulation of fresh air at the rate of 300 f.p.m. The shovels have been converted from steam to air operation, and the truck engines are stopped while the trucks are being loaded. Exhaust air from the shovels is of benefit in keeping CO to a minimum. As an added precaution the Mine Safety Appliance alarm is stationed near each shovel, which will warn the workmen if the CO exceeds .02 percent.

Each truck averages about four miles to a gallon of fuel oil which costs 5½c per gal. Actual operating cost since April, 1939, has averaged 2.11c per mile. A fourth Diesel-powered truck, purchased recently, is used for handling overburden.

This Diesel truck operation in a mine points to an increasing trend toward the use of this form of power in confined quarters as CO gas is not found in dangerous quantity but ventilation precautions must be observed.

Another Diesel-operated tractor, semi-trailer unit operates in quarry, hauling 15 tons per load

Taking Off The Wheels

(Continued from page 58)

ance below for trucks. The roofs and most of siding are of corrugated sheet steel, and the framing comprises creosoted timber poles for the vertical members and creosoted joists.

In the quarry, a Gardner-Denver compressor unit powered with a 50-hp. Waukesha gasoline engine furnishes air to operate the Gardner-Denver sinker drill. A ⅝-cu. yd. Bay City shovel loads the blasted rock into trucks for delivery to the primary crusher.

John Keller, Jr., and Emil Keller, brothers, supervise the crushed stone plant.

Vermiculite Deposits in South Africa

BUREAU OF MINES recently received a letter describing an economically workable deposit of vermiculite in the Palabora district, Northeastern Transvaal, South Africa, which has been under study by the Director of the Geological Survey of South Africa. In this particular deposit, systematic prospecting over a considerable area has revealed vermiculite down to depths of 50 to 60 ft., below which there is a gradual transition to phlogopite. There are also deposits in which vermiculite and apatite are associated.

Minnesota Wants Lime Industry Developed

MINNESOTA RESOURCES COMMISSION, as the result of a survey on possible expansion to its present industries, has suggested the re-development of the lime industry in Red Wing, Minn. This section was at one time the lime center of the State.

Considering Manufacture of Rock Wool

PONCA CITY, OKLA., recently completed a report on the possibilities of making rock wool from local materials and held a Chamber of Commerce meeting to make known results of the study to individuals interested in developing a rock wool industry.

Build "Cold Mix" Plant

RANKIN-MILLER CO., Wooster, Ohio, has completed a "cold mix" asphalt plant road surfacing material known as T-34 for resurfacing. Other plants of the firm are located at Wooster, Ashland and Fostoria. R. L. Crone of Fostoria, Ohio, will be in charge of the plant.

Open Sand Deposit

N. C. CARROLL and his sons, Lee and Dale, of Wakefield, Kans., have started a sand plant on the Moloney farm, two miles west of Junction City. The owners of the new operations operate a fleet of trucks, and have another sand plant at Superior, Nebr.

Working Asbestos Deposit in California

ASBESTOS INSULATED PLASTER AND MATERIALS CO., Stockton, Calif., has built a plant south of the city to manufacture "asbeto" plaster. The base material is a short fibered asbestos to be taken from a deposit six miles northeast of Copperopolis. It is estimated that 8,000,000 tons of asbestos are available.

Buying Lake Sand

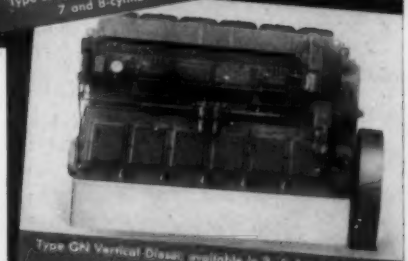
MILWAUKEE, WIS., is now buying lake sand for $1.25 a ton to be used in the municipal asphalt plant in place of the more expensive silica sand costing about $2.38 a ton. The city buys about 100 tons a week during the seven months of the construction season.

Damaged by Fire

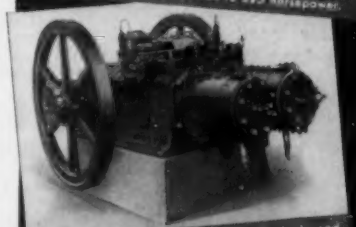
SCIOTO LIME AND STONE CO., Delaware, Ohio, plant was damaged by fire to the extent of $10,000 recently. Damage was limited to the kilns and open kiln shed. Reconstruction work was begun immediately.

ARE POWER BILLS EATING YOUR PROFITS?

Type LS Diesel, largest of the Cooper-Bessemer line, built in 5, 6, 7 and 8-cylinder units and rated 440 to 1250-hp.



Type GN Vertical Diesel, available in 3, 4, 6 and 8 cylinder units, and rated 125 to 525 horsepower.



Type G-AW Horizontal Diesel built in single and twin cylinder units and rated 50 to 110 horsepower.

Alert plant owners have found diesel power the answer!

Consider carefully just which diesel engine to use . . . and investigate Cooper-Bessemers. They range in size from 50 to 1250 horsepower . . . with a unit to fit your plant. They are not racehorses that wear out quickly, but medium speed engines that work and work, with minimum repairs and few shutdowns. They're rugged, with over a hundred years of "knowing how" built into them. They offer every modern feature for lube oil, fuel oil, and maintenance economies . . . economies that mean profits!

Get all the facts . . . A post card does it!

Let us help YOU plan a power plant that will mean better products at lower costs. Use the coupon!

The Cooper-Bessemer Corporation
Mount Vernon, Ohio

Yes, we are interested in lower power costs, and we want your Diesel booklet.
We use approximately _____ horsepower.

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Street Address _____
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Mount Vernon, Ohio — PLANTS — Grove City, Penna.

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W. D. Taulman, 175 Spring Street, Atlanta, Georgia

Right: View of Churchill Sand and Gravel Co. crushed stone plant after it had been enclosed. To the left, crushing and screening plant, and to the right, stockpiling conveyor

Left: Other side of plant, showing long earth fill ramp leading up to primary crusher. Two of Diesels housed in lean-to structures on the left

From Portable to Permanent

Three 165-hp. Diesels operate all crushed stone equipment converted from portable to permanent plant

By RALPH S. TORGERSON

STARTING a few years ago with portable equipment, Churchill Gravel Co., Pontiac, Ill., has increased its production from year to year until it is now recognized as one of the major sand and gravel producers in this immediate territory. With the growth in business and the operations of the company stabilized, a more permanent type of plant became desirable. The sand and gravel plant near Fairbury, Ill., has experienced this trend and with the new washing facilities added three years ago is now to all intents and purposes a permanent plant.

When E. L. Chesebro, president of the Churchill Gravel Co., and his brother Ralph Chesebro, superintendent, decided to branch out into the crushed stone business near Chenoa, Ill., a few miles south of Pontiac, two Cedarapids portable plants were obtained from the Iowa Manufacturing Co., one was a rolls and the other a jaw crusher unit. Each unit was powered by a 165-hp. K-P601 Cummins Diesel unit.

This setup was designed primarily for the production of agricultural limestone although road material also was produced in considerable volume. It soon developed that a more permanent type of plant was needed and steps were taken in the fall of 1940 to convert the portable units.

The illustrations taken before the plant was enclosed show how these units have been set up to make a permanent plant. Other views show the completely housed crushing and screening units, and the 1500-ton, five-compartment steel storage bin in which the various sizes are distributed by chutes. There are no direct rail connections and all materials will be trucked from the plant.

An interesting method was employed to support the crushing and screen units. Each unit was raised on top of railroad tie cribbing until the desired height was obtained. Then the foundations were excavated to bed rock and concrete was poured in forms and around the cribbing. The result is a strong foundation at a relatively low cost. Each of the three portable Diesel engines also has the wheels mounted on concrete piers embedded in the ground with suitable

Overall view of crushing and screening equipment and two of the Diesels before they had been enclosed

permanent concrete blocks to prevent movement. Two of the Diesels transmit power by flat belt to the jaw and roll crushers and a third unit operates the hammermill to make agricultural limestone. Concrete piers placed near the large storage bin support the hammermill.

Crushing and Screening

Stripped material from the quarry was used to build a ramp to enable trucks from the quarry to dump into the hopper feeding the 25- x 48-in. Cedarapids primary jaw crusher. A short belt conveyor carries the throughs to a chute feeding a 3- x 12-ft. Symons double-deck screen mounted above a 24- x 40-in. Cedarapids roll crusher. The top deck has a 2-in. mesh screen, and the lower deck a ¾-in. mesh screen. Throughs from the screen go to a 24-in. belt conveyor, about 90 ft. centers, which elevates the material to the top of the first compartment of the 1500-ton capacity steel bin. Oversize from the Symons screen goes to the roll crusher, the throughs being recirculated back by a 24-in. parallel belt conveyor, 20-ft. centers, and chuted to the main belt conveyor feeding the screen. The capacity of the roll crusher is about 56 tons per hour of minus ¼-in. material.

Crushed material going to the top of the steel bin is ¾-in. down. This material is fed to a double-deck Simplicity vibrating sizing screen, driven by a 5 hp. electric motor, which will make road aggregate or any desired specification material for transference by chute to the various bin compartments, each of which hold 300 tons. Crushing capacity of the plant will be approximately 1000 tons per day of road materials and agricultural limestone.

Separate Crusher for Agstone

It is anticipated that a considerable volume of business will continue to be agricultural limestone. The Williams Jumbo hammermill, previously mentioned, will be used primarily to make agricultural limestone although the roll crusher may be adjusted to make more fine products. If it is desired to make a larger proportion of agricultural limestone, the Simplicity sizing screen at the top of the steel bin may be bypassed and all the material going up the main belt conveyor chuted to the hammermill on the ground below. The product of the hammermill is carried back to one of the bin compartments by bucket elevator and chuted into one of the bin compartments to be hauled out directly by trucks. A belt conveyor projecting at right angles from the storage bin is used to stockpile any excess agricultural limestone when bins are full.

Balance Power Load Between Two Diesels

Methods of transmitting power are somewhat unique in that portable Diesel units have been adapted to a permanent plant layout with the power load being balanced between two 165-hp. units capable of handling peak loads of 200-hp. each. The third 165-hp. Diesel operates the hammermill independently.

One Curtis compressor serves to start the two 165-hp. Diesels operating the two crushers, Symons screen and three conveyors. It is mounted on the steel frame of one of the Diesels, pumping air into the four tanks, two of the same size on each Diesel, by means of a pipe leading from one unit to the other. Air control valves permit starting either unit or both at the same time. The third Diesel will have its own compressor unit and tanks for starting.

A repair shop building has been erected a short distance from the main plant. Tools, repair parts and

MORE POWER..MORE PROFITS!

Compact, lighter in weight, the Murphy is a true DIESEL, providing real operating economy with simple, sturdy construction that means years of reliable performance. Generator Sets are rugged, compact, simple to operate — in every detail built for continuous heavy duty service.

Murphy Diesel engines are available in sizes 85 to 200 H. P.; generator sets 55 KW to 115 KW, A. C. or D. C.

Write for complete information.

MURPHY DIESEL COMPANY
MILWAUKEE, WISCONSIN

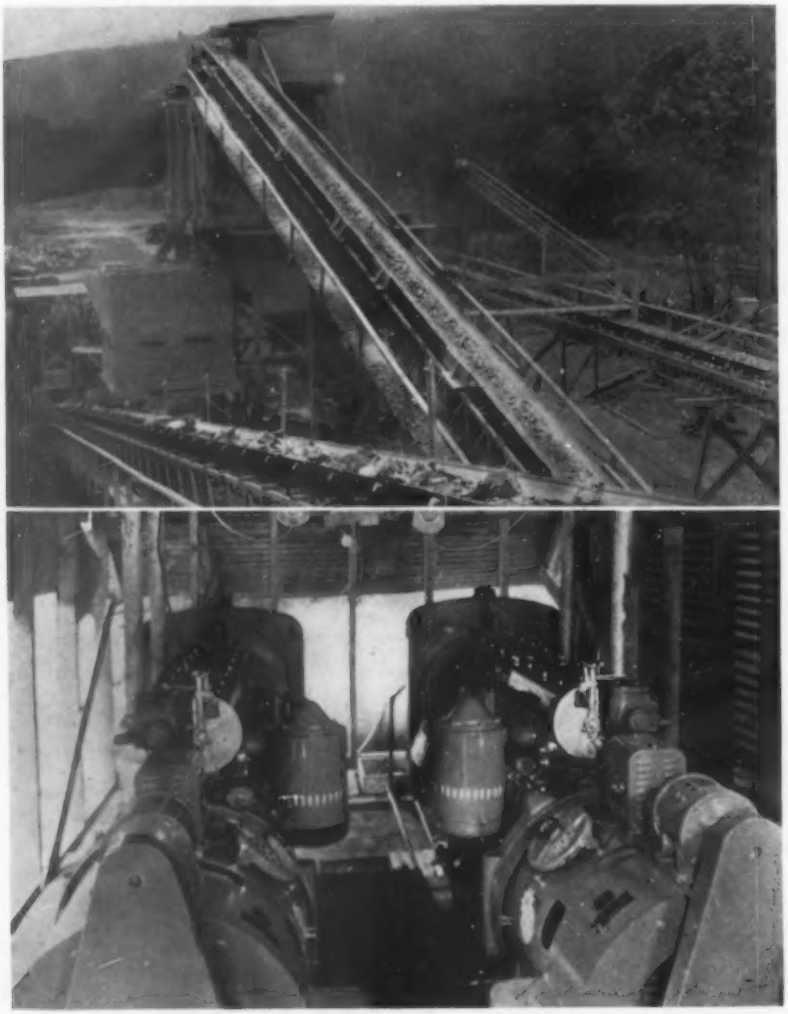
Left: Primary crusher hopper and two conveyors, one feeding the scalping screen and the other inclining upward to the final finishing vibrating screen at the top of the large bin. Center: Close-up of the 165-hp. Diesel. Right: Primary jaw crusher

other supplies are kept here. The scale house is located on the road leading to two main highways.

Rubber Paint

THE B. F. GOODRICH CO., Akron, Ohio, has introduced a new grade of Koroseal paint, named "Koroplate," developed to protect metal surfaces against chemical reactions or for service wherever extremely corrosive conditions disqualify other kinds of paint.

This product is of particular interest to rock products producers as its base, Koroseal, is a synthetic product derived by a series of chemical reactions from the common materials: coke, limestone and salt.



Above: General view of the crushed stone plant operated by the Contractors Service Corporation at Camp Hill, Penn. This was a temporary set-up for Pennsylvania Turnpike job. Below: Two Model ME-650 Diesel-electric generator sets to operate all equipment at this plant. Mounted on trailers, this equipment can be transported to any job

Concrete Brick

BASSETT DUNBRIK CO., Bassett, Ark., is manufacturing concrete "Dunbrik" and roofing tile. The plant itself was built recently of brick and tile made on the job. The company has its main office at Blytheville, 30 miles north of Bassett.

Quarry Defense Contract

MADERA QUARRIES CO., Madera, Calif., has a large federal order to supply stone for barracks and other construction. This company is operating at full capacity after a long shut-down.

New Product

PHILIP CAREY CO., Cincinnati, Ohio, has developed a new asbestos-cement wallboard which will be known as Careystone. It is said that it can be nailed, sawed, hammered, and perforated.

Going Into Ready Mix

WALKER CONSTRUCTION CO., Mattoon,, Ill., building materials company and contractors, has announced through Albert C. Huckaba, an official of the company, that two transit mix trucks have been purchased and a batching plant set up.

Agricultural Limestone Plant

CONSUMERS' LIME CO., Gold Bar, Wash., has opened a new limestone plant to furnish agricultural limestone to farmers in the Puget Sound area. The plant will have a capacity of 150 tons in 24 hours.

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LONE STAR CEMENT CORPORATION, New York, N. Y., has had a sharp increase in business due to a cessation of foreign importations of cement. The company's South American business is increasing for the same reason.

NATIONAL ASSOCIATION ACTIVITIES

Industrial Sands

STANTON WALKER, consulting engineer, National Industrial Sand Association, and chairman of its committee on foundry sand, is the author of a paper "Reproducibility of Tests of Foundry Sand," read before the American Foundrymen's Association, reprinted in booklet form by this association for the National Industrial Sand Association. It is a fairly complete treatise on testing of foundry sands, at least as to sieve analysis; fineness, strength, permeability and other properties of bonded sand.

A.S.T.M. Convention

AMERICAN SOCIETY FOR TESTING MATERIALS, meeting in Chicago (Palmer House), June 23-27, has scheduled for the session on concrete and concrete aggregates, the presentation in brief form of reports which Committee C-9 on Concrete and Concrete Aggregates is adding to its report on the Significance of Tests on Concrete and Concrete Aggregates. Discussions will cover size and shape of aggregates, density and unit weight of concrete, mineral composition, permeability and adsorption of concrete. Also to be discussed will be the theoretical effect of dimensions and of method of loading upon the modulus of rupture of beams, and the effect of capping methods and end conditions before capping upon compressive strength of cylinders. Other papers are expected to cover "creep" or "flow" of concrete which is shown to be an elastic action due to nonuniform shrinkage under working load conditions, freezing - and - thawing technique, a device for measuring the plasticity of concrete, and discussion on the sonic methods of testing concrete.

Sand and Gravel

DISCUSSING the extension of priority powers, Executive Secretary V. P. Ahearn of the National Sand and Gravel Association, calls attention to the Vinson Bill which has been reported favorably by the House. This bill enlarges the powers of the Priorities Division to cover subcontracts or suborders, and therefore is of particular interest to producers of aggregates as most of their defense business is received in the form of a subcontract. More stringent regulations as to ordering, loading and unloading of railroad cars has been recommended by Ralph Budd, Commissioner of Transportation. Advance notice of car requirements must be given, cars must be unloaded promptly, and cars must be loaded to maximum journal carrying capacity.

The WPA construction program includes $150,000,000 worth of projects at 350 sites certified by the War and Navy Departments as important to defense. Access roads to army and navy posts are now being built with a force of more than 10,000 WPA workers.

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EXECUTIVE SECRETARY V. P. AHEARN of the National Sand and Gravel Association has cautioned member companies utilizing navigable waters of the United States for production or transportation purposes, or both, to study carefully the Transportation Act of 1940, which, among other things, establishes public control over water carriers. Common carriers must have a certificate of public convenience and necessity, except that under the so-called grandfather's clause, the Commission will issue certificates to those engaged in bona fide operations on January 1, 1940. Contract carriers must receive a permit.

While private carriers do not seem to be covered by the Act, some member companies using the navigable waters handle the products of other industries as contract carriers during periods of the year in which sand and gravel operations are reduced or temporarily suspended. It has been recommended that if there is any uncertainty as to status, then companies should write to W. P. Bartel, secretary of the I.C.C., in Washington, D. C., outlining the extent and character of the water operations.

COMING CONVENTIONS

National Industrial Sand Association, The Homestead, Hot Springs, Va., June 19 and 20.

American Society for Testing Materials, Palmer House, Chicago, June 23 to 27.

National Cinder Concrete Products Association, Atlantic City, N. J., August 4, 5, and 6.

Board Meeting

NATIONAL READY MIXED CONCRETE ASSOCIATION will hold its semi-annual board meeting at the Palmer House, Chicago, Wednesday morning, June 25, at 9:30 a. m., Chicago daylight time. Executive Secretary Ahearn announces that in accordance with traditional policy the meeting will be open to any active or associate member who cares to come. This is the week of the American Society for Testing Materials convention at the same hotel, so those intending to attend should make reservations early.

Interstate Truck Ruling by I.C.C.

W. Y. BLANNING, Director of the Bureau of Motor Carriers, in a letter to Executive Secretary Ahearn, National Sand and Gravel Association, answered certain questions as to whether specific types of trucking operation were under the jurisdiction of the I.C.C. Where motor vehicles are operated in the transportation of sand, gravel and other commodities from yards or plants in one state to destinations in other states, the operations are in interstate commerce irrespective of the origin of the goods so transported. Private carrier safety regulations apply to the motor vehicles and the drivers thereof engaged in these operations.

Where materials are transported from a yard or plant in one state to a destination in the same state but some of the materials so transported originate in other states the destination of which was known and intended, the operations are subject to I.C.C. regulation and control. In the case of building materials originating in other states which are stored at the yard or plant for future sale and distribution and the ultimate destination is not known until after its arrival at the yards and the goods are sold, the transportation of such materials from the yard to destinations within the same state is transportation in intrastate commerce even though the goods originated in another state. Drivers of vehicles used in both interstate and intrastate commerce are subject to the jurisdiction of the Commission on any day in a given week in which he operates in interstate commerce.

NEWS ABOUT PEOPLE

Busy Executive

FEW EXECUTIVES in the rock products industry have more jobs—and active ones—than Eric Ryberg, of Salt Lake City. Recently there came

Eric Ryberg

to our desk an interesting booklet (the annual report) on the Utah-Idaho Sugar Co. It includes a portrait of our friend, Eric Ryberg, captioned "Executive Vice-President." Our readers know him as the head of the Utah Sand and Gravel Products Corp., but he is also a partner of Ryberg Bros., prominent contractors, and a director of numerous other enterprises which stem from Salt Lake City.

Some months (may be several years) ago we published a personal item about Eric and inadvertently illustrated it with a picture of Eric's brother, Bill. One would recognize them as members of the same family, but Eric says Bill is a better looking guy than himself. So herewith is a picture of Eric, taken perhaps about a couple of years ago, so you see Eric need make no apologies.

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WILLIAM S. HUGHES, newly elected president of the Lehigh Valley Traffic Club, is traffic manager of the Trojan Powder Co., Allentown, Penn.

L. ROY SNOW has been made general manager of the Utah Sand and Gravel Products Corp., Salt Lake City, Utah. Eric Ryberg, president, is devoting a large part of his time to his job of executive vice-president, Utah-Idaho Sugar Co.

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R. B. FORTUIN, formerly of Pennsylvania-Dixie Cement Corp., Nazareth, Penn., now secretary, in active charge of the Bag Closure Corp., manufacturer of the new Rip Cord Closure for cement bags, has been honored by the Department of Labor and Industry, State of Pennsylvania, by having his address on cement dust printed and circulated as a state document. "Nontoxicity of Cement Dust" is the subject of a 10-page illustrated mimeographed booklet, published as Safe Practice Bulletin 50 in the series on occupational disease prevention. This was a talk presented at a monthly safe practice conference sponsored jointly by Pennsylvania State College and the State Department of Labor and Industry. It includes discussion of the accident record of the cement industry, the

R. B. Fortuin

process for manufacturing portland cement, and results of a health survey, from which it is concluded that the cement industry does not involve a hazard toward the development of tuberculosis and there is no silicosis hazard in the industry.

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LEE H. HILL has been elected vice-president of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., to head up the newly created Industrial Relations department. In his new

Lee H. Hill

capacity, Mr. Hill, formerly assistant manager of the electrical department, will be in charge of collective bargaining, grievance procedure, employment, wage policies and levels and all other subjects which bear on management-employe relations.

For some years past Mr. Hill has made an intensive study of industrial relations. Though only 42 years old, Mr. Hill has had a brilliant career. He served two years as an instructor in electrical engineering at Cornell University following graduation. Later he became associated with the Westinghouse Electrical and Manufacturing Co., as a transformer design engineer. For a number of years he was manager of the transformer division of the American Brown Boveri Co., and joined the Allis-Chalmers Co. in 1931 when the former was absorbed.

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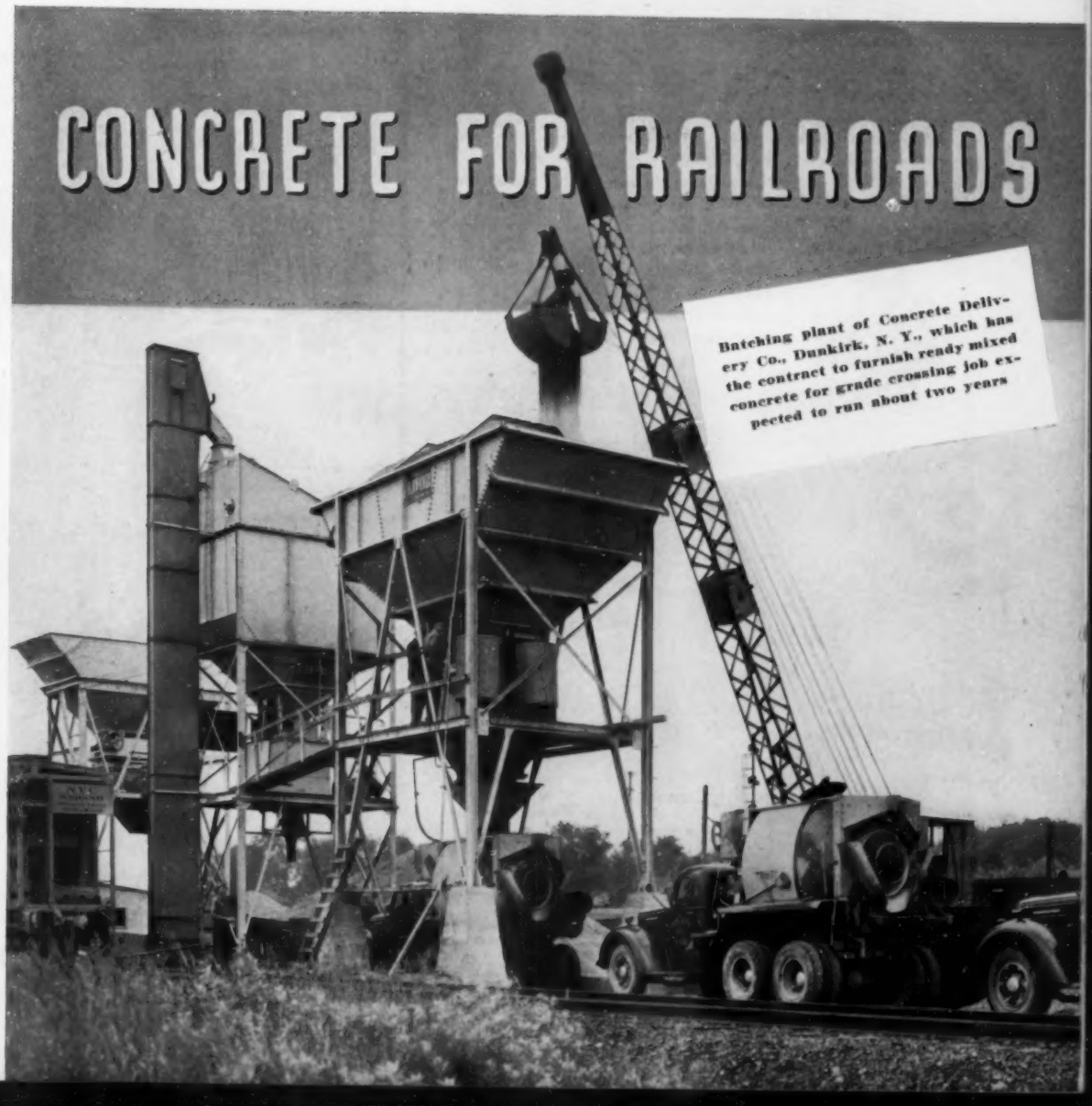
Universal Atlas Appointments

BLAINE S. SMITH, president, Universal Atlas Cement Co., New York City, a United States Steel Corp. subsidiary, announces the appointment, effective June 1, of HENRY C. SCHMIELAU as general auditor, and JOHN J. HEFFERNAN as secretary, succeeding O. N. Lindahl, comptroller and secretary, who, after more than thirty years with the company, has resigned to become vice president-finance, Carnegie-Illinois Steel Corp., Pittsburgh, Penn.

CONCRETE PRODUCTS AND CEMENT PRODUCTS

CONCRETE FOR RAILROADS



Batching plant of Concrete Delivery Co., Dunkirk, N. Y., which has the contract to furnish ready mixed concrete for grade crossing job expected to run about two years

That EXTRA EARNING POWER

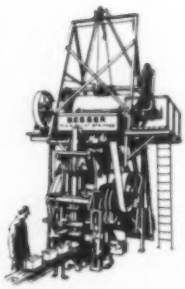
Maximum Earning Power

is what you want in your Concrete Products Plant. Besser Automatic Plain Pallet Strippers will give it to you with these and other exclusive features.

- —Lowest first cost equipped with all necessary Plain Pallets.
- —Constant Automatic operation with no production "voids".
- —No machine operator.
- —One-man offbearing.
- —Fully Pressed Top perfect dimensioned blocks.

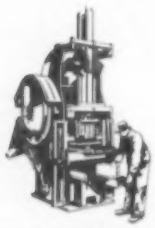
BESSER TAMPER PLAIN PALLET STRIPPERS

Besser Victory Fully Automatic Plain Pallet Stripper—2160 per day



Besser Super Fully Automatic Plain Pallet Stripper—3120 per day

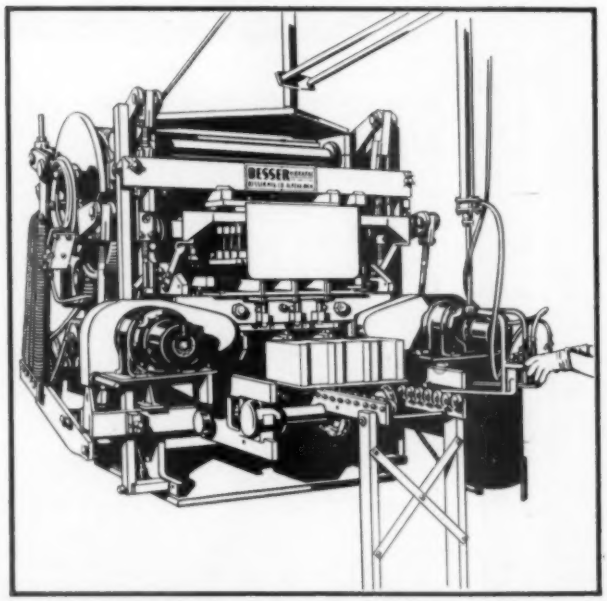
Every model Tamper or Vibrator Besser Plain Pallet Stripper makes all sizes and types of units on one set of plain wood or steel pallets. This exclusive feature makes Besser machines the most economical to own and operate.



Besser Semi-Automatic Plain Pallet Stripper—1680 per day

Besser Champion Plain Pallet Stripper—1000 per day

Besser Multi Mold Plain Pallet Stripper—250 per day



Besser Super Plain Pallet Vibrapac—4800 per day

Undirectional vibration under Flam patents (other patents pending) was employed to make the first vibrated blocks ever produced commercially. The Besser Vibrapac combines undirectional vibration with the exclusive Besser Plain Pallet principle. Users of these machines are fully protected under Besser and Flam patents.

Fully Pressed Top Blocks are made on all Besser Plain Pallet Strippers, Tampers and Vibrators. This exclusive Besser feature insures accurate dimensions with straight edges and square corners. They are known as the blocks that are "true and perfect as cut stone".

Write NOW for details. State sizes and production wanted.

BESSER MANUFACTURING COMPANY

COMPLETE EQUIPMENT FOR CONCRETE PRODUCTS PLANTS

206 41st STREET ALPENA, MICHIGAN

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

Concrete Block For the Steel City

Housing shortage in Gary, Ind., and surrounding cities creates big demand for concrete masonry units

By RALPH S. TORGERSON

Exterior of modernized concrete products plant, showing elevator to transport aggregates into bins on roof

WITH THE STEEL INDUSTRY in Gary, Ind., operating at unprecedented capacity there has grown up an insistent demand for more housing. To meet this demand the Midwest Concrete Products Co., Gary, Indiana, affiliated with Midwest Concrete Pipe Co., Chicago, was set up in an established plant and modernized with new batching and mixing equipment, and a new No. 9 Stearns Joltcrete machine.

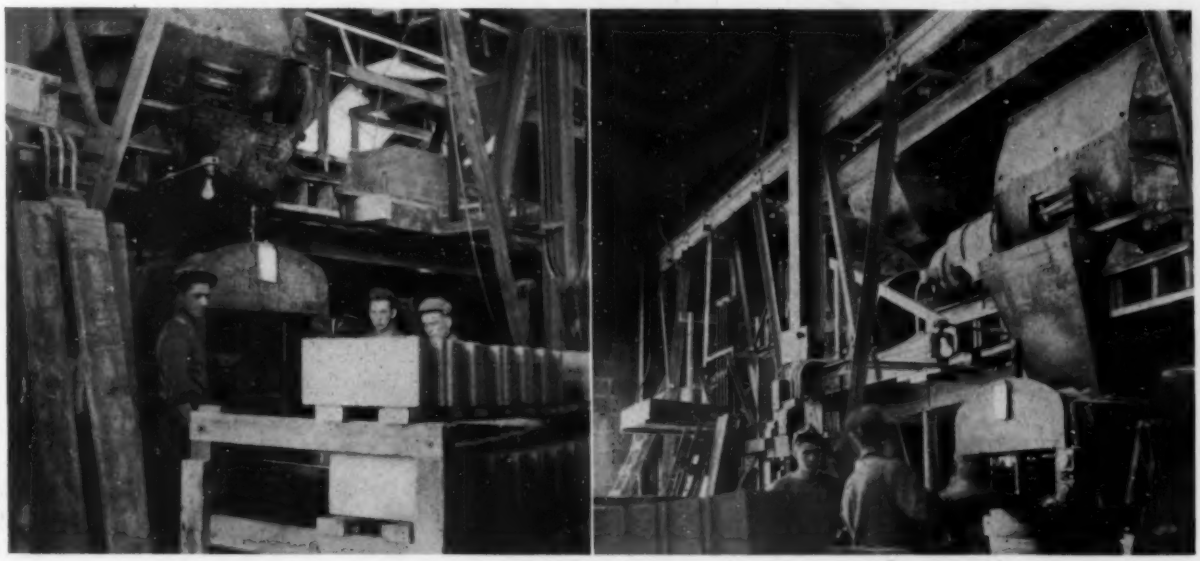
The curing and storage yards also were improved by laying down concrete runways over which loaded racks of block are hauled by means of a Clark gasoline engine-powered tractor.

As shown in one of the illustrations, aggregates are trucked up a ramp fill to a hopper feeding the boot of a 36-in. bucket elevator, about 25 ft. centers. A swivelling chute from the elevator directs the aggregates into four compartments of two large steel bins, each of which holds 150 tons. This bin is supported from concrete piers in the ground by structural steel members. Concrete cribbing, made at the Franklin Park, Ill., plant of the affiliated company, serve as a retaining wall for the ramp.

In addition to the No. 9 Joltcrete, which has a capacity of 500 standard block units per hour, there is an Anchor stripper and a face down machine on which rock face block and special sizes are made. The mixers are located on a mezzanine platform, above and back of the three block machines, which is supported from the same structural members that support the bins. Aggregates are released from the bin compartments into a lorry bucket of 1-cu. yd. capacity which travels on I-beam rails over the top of the mixers. The mixer operator carefully controls the water content of the mix to provide the proper consistency.

Light-weight blocks which are made on the No. 9 Joltcrete use a

(Continued on page 78)



Left: Close-up of vibrating block machine. Right: Mezzanine floor above shows mixer and the lorry to transport aggregates on rails from the bins, above

Testing New Masonry Units

National Bureau of Standards making standardized tests to determine construction qualities

MASONRY WALL constructions of various types have been subjected to a series of standardized laboratory tests by the National Bureau of Standards, Washington, D. C., to provide data on the properties of these constructions. Several of these have been concrete masonry units of entirely new design, illustrations of which are shown, herewith.

One construction submitted for test by the Nelson Cement Stone Co., East Braintree, Mass., is the Nelson Pre-Cast Foundation, which comprises wall panels cast in horizontal wood forms with sheet-metal cores. These units are transported to the building site by truck and erected by means of a crane truck. Openings for windows, ventilators, and pipes are provided by cores set in the form. The panels rest on a poured concrete footing with a ½-in. mortar bed. Walls are insulated between the ribs of each panel. Twenty-six houses have been built with this construction.

Somewhat similar units were submitted by Connecticut Pre-Cast Buildings Corp., Irvington, N. Y. These units, known under the trade name of "Twachtman," comprise precast hollow reinforced wall and floor panels designed to be erected on masonry foundations by the use of crane trucks. The wall panels are cast in adjustable steel forms which provide a smooth inside face complete with trim. Window frames, door hinges, registers, and other hardware are placed in the forms and cast integrally with the panels. The panels are made full-story height and usually the width is the width of the room. The floor specimens were 12 ft. 6 in. long, 4 ft. 6 in. wide and 6 in. thick. Each specimen under test consisted of a hollow reinforced concrete slab, having faces 1 in. thick and four joists integral with the faces, and they were cast in a horizontal position with the lower face down. Foundations were concrete footings, and either conventional masonry or precast hollow concrete panels. Units under test were made by the Richmond Ready-Mix Concrete Corp., Richmond, Va. About 35 houses embodying these constructions were completed early in 1939.

Double Wall Construction

Cinder concrete blocks of unusual design, manufactured by Mahlstedt Materials Co., New Rochelle, N. Y., and submitted for test by the National Concrete Masonry Association, are shown in the illustration. These units, referred to in ROCK PRODUCTS for March, 1939, p. 68, are laid up as a hollow, double wall with two 4-in. units and a 2-in. air space. Forty houses have been built, using this construction.

Another construction under test uses "Dun-Ti-Stone" units made by Silver Hill Brick Corp., Washington, D. C. In this construction, reinforced concrete pilasters or columns are formed in the space between the facing and the backing by inserting stops at the desired locations and placing reinforcement steel and concrete in the enclosed space. Beams and lintels are also reinforced concrete, formed in the same manner.

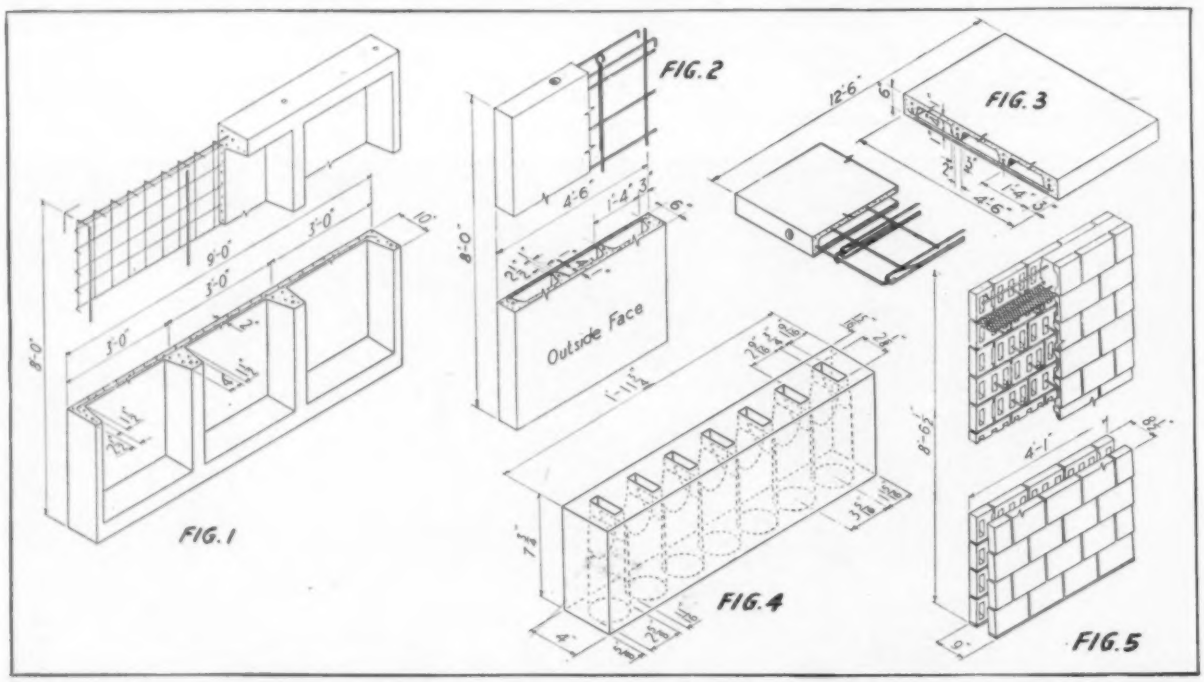


Fig. 1: Nine-foot wall specimen submitted by Nelson Cement Stone Co., East Braintree, Mass. Fig. 2: Four-foot wall specimen of the "Twachtman" construction. Fig. 3: Floor specimen of "Twachtman" construction. Fig. 4: Concrete block made by Mahlstedt Materials, Inc., New Rochelle, N. Y., submitted for test by National Concrete Masonry Association Fig. 5: Four-foot wall specimen, using "Dun-Ti-Stone" concrete brick made by Silver Hill Brick Corp., Washington, D. C.

Big Defense Jobs Don't Stop Advertising

New Albany Ready Mix Concrete, Inc., builds new plants and continues advertising to keep small contractor business

By BROR NORDBERG

ADVERTISING in newspapers and in other local media is used very effectively in promoting the sale of ready-mixed concrete. However, it is usually small space taken just to keep the company's name and product before the public.

An increasing volume of business by New Albany Ready Mix Concrete, Inc., New Albany, Ind., is proof that "it pays to advertise." New Albany, just across the Ohio River from Louisville, Ky., is a small community where ready-mixed concrete was not used until two years ago. Today, ready-mixed concrete represents 99 percent of all the construction.

Recently built Jeffersonville, Ind., plant, showing bulk cement cars unloading on siding

Three years ago an attempt was made to introduce the product but a prejudiced public and the contractors were opposed to anything so new. In 1939 a new organization took over the small plant from which has grown a business that compares favorably with any in the middle west. The corporation now operates two ready-mixed concrete plants, in New Albany and Jeffersonville, Ind., with a combined capacity of 1800 cu. yd. of concrete in 8 hr. and a fleet of 13 truck mixers.

One of the "open house" type ads of New Albany Ready Mix, Inc., which excites the public's curiosity by a series of questions

Continuous Advertising Program Brings Results

W. R. Sostheim, president and manager of the corporation, started to advertise in consumer papers and has never stopped.

As a result of this aggressive sales program the New Albany plant was tripled in size, and a second plant was purchased later to batch concrete for construction of a flood wall at Tell City, Ind. Upon completion of this 21,000 cu. yd. contract early in 1941 the plant was set up in Jeffersonville, Ind., and the advertising program enlarged.

Today, the company serves both cities and the surrounding country over a 25-mile radius and advertises in seven daily newspapers, county papers, bi-weekly papers and "contributes" ads to other local media. Population of the area is about 70,000. There is not a day that goes by without an ad appearing in at least one paper and the space is never less than one-half page. Usually full pages are carried.

Weighing out bulk cement which is dumped into mixers after they have received aggregates from the other batcher. A mixer truck can be filled from either batcher, one with aggregates and another with cement, at the same time

One of the recently acquired mixer trucks receiving aggregates

Temporarily, the greatest volume of concrete is being delivered to seven government projects under construction, but the local small customer is not being overlooked or neglected in any way. The management realizes that these small users of concrete are its best customers in the long run. More money is appropriated for advertising when business is good as part of a long range policy of looking ahead when business might not be so good. Simultaneously with fulfilling large government contracts, 75 percent of all house foundations, for example, are being poured from transit mixers.

Don't Neglect Local Users for Government Contracts

All the advertising is directed toward the individual, the man who spends the money and who has the power to persuade the contractor to use ready-mixed concrete. The theory back of this advertising is to get this type of buyer interested in ready-mixed concrete so he will say "ready-mixed" when he engages a contractor or builder.

Supplementing regular advertising, announcements are carried in large space, inviting people to visit the plants. This opportunity to learn about ready-mix was not restricted to contractors and builders when the plants were formally opened. The company sponsors athletic teams and is getting plenty of free newspaper publicity even on the front pages. Contractors are sold on the product by direct contact, when Mr. Sostheim and other members of the corporation stress how a contractor can keep more jobs going at less expense by the use of ready-mixed concrete.

All the advertisements, written by Mr. Sostheim personally, are easy to understand and informative. Certain themes are followed in the copy, and heavy, technical matter is avoided entirely. Many of the ads are written on the order of questions and answers, with headings such as "What Is Ready Mixed Concrete?" "Why Use It?" "How Is It Made?" and "Why Is Ready Mixed Concrete Strength Concrete?" Another series was written on the theme of "Why Mix Your Own Concrete?" emphasizing the advantages of plant control and how other products are preferred when prepared ready for use. Another set of ads plays up well impermeability and the lack of cracks, etc. Or one series gets down to the fundamentals in "The A, B, C's of Ready-Mixed Concrete."

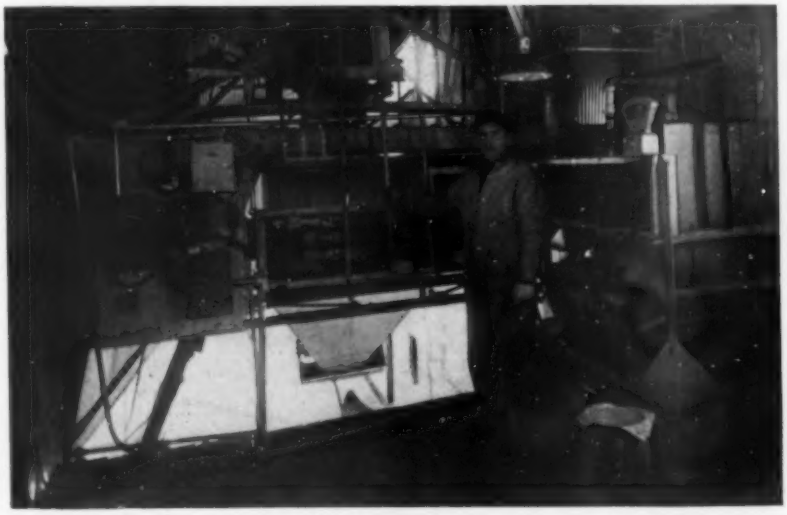
Some of the more "catchy" ads are written along the lines, "Do you know that a cubic yard of concrete weighs over two tons?" "Do you know that we deliver in the country?" "Do you know that a cubic yard of concrete will lay 35 ft. of sidewalk 3 ft. wide and 8 in. thick?" or "Do you know that ready-mixed concrete and contractors are pals?" At times certain outstanding jobs are featured, but care is taken to avoid knocking competitors in any of the advertising.

Equipment and Methods

Both plants are similar and consist of Butler steel bins and batchers. The older plant is equipped for sacked cement while the newer, at Jeffersonville, provides for bulk cement.

The Jeffersonville plant has a 600 bbl. storage capacity for cement in

(Continued on page 76)



Aggregates batcher which is independent of the bulk cement batcher and on the other side of the batching floor. Note 100-gal. water tank on the right

ABSOLUTELY, YOU CAN MAKE MORE MONEY with JAEGERS

CHARGE FASTER
MIX FASTER
DISCHARGE FASTER

EITHER
HIGH DUMP
TYPE

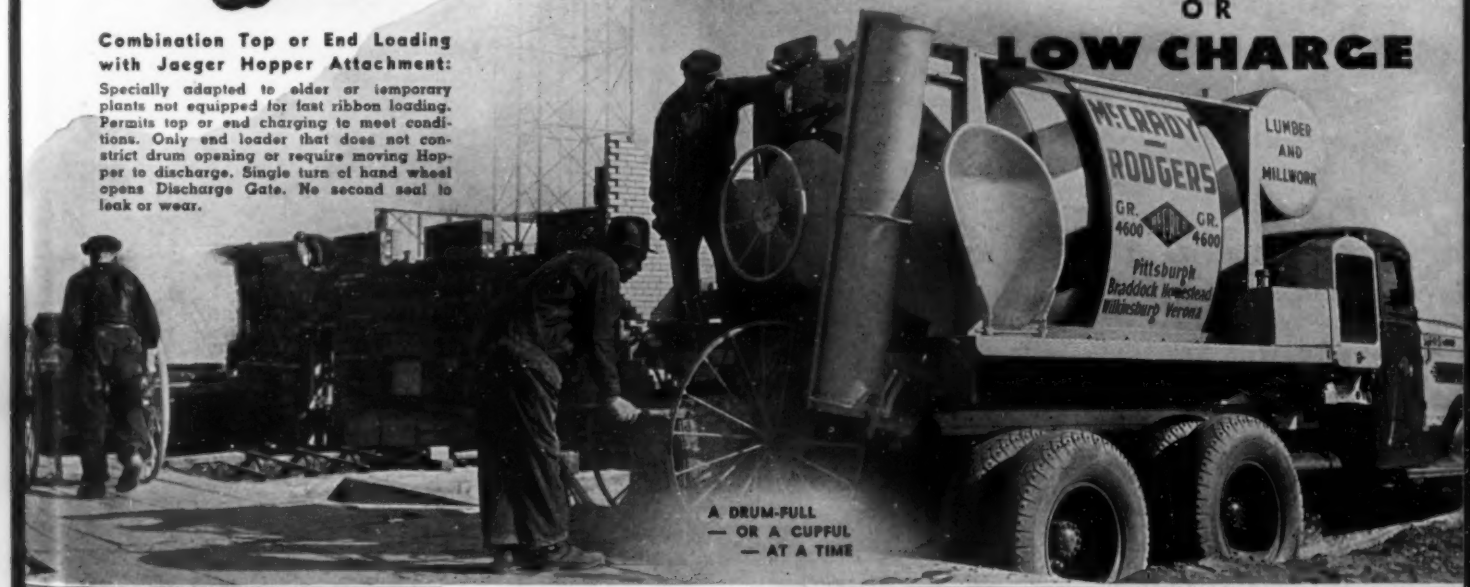
Today's concrete production is going to Jaeger Truck Mixers, Agitators as fast as operators can expand their plants: (1) because the concrete industry has proof of the *higher quality* of material produced by the Jaeger Dual-Mix Drum; (2) because opportunities for comparison, on this year's gigantic projects, have proved beyond question that Jaegers, whether HIGH DUMP or Standard LOW CHARGE, can load, mix and discharge faster than any other mixers of their type.

Jaeger, alone, offers this higher payload production with standard 2-Speed Transmission (Separate Engine or Vacuum-Controlled Truck Engine Drive), One-Shot Top Loading, Vacuum-Controlled High Discharge Door, End-to-End Water Sprays and Mixing in Sealed Drums — *in the only line that completely meets every specification and operating demand.*

Combination Top or End Loading with Jaeger Hopper Attachment:

Specially adapted to older or temporary plants not equipped for fast ribbon loading. Permits top or end charging to meet conditions. Only end loader that does not constrict drum opening or require moving Hopper to discharge. Single turn of hand wheel opens Discharge Gate. No second seal to leak or wear.

OR
LOW CHARGE



A DRUM-FULL
— OR A CUPFUL
— AT A TIME

JAEGER PORTABLE HOPPER

Saves Truck Mixers Waiting—Means 25% More Payloads per Day on the Average Job.

Tows to job behind truck mixer —takes full 2 or 3 yd. batches. One hopper serves almost any job.

THIS HANDY BLANK BRINGS YOU FULL INFORMATION:

Complete 1941 Data, Models, Specifications, Prices, Terms

THE JAEGER MACHINE COMPANY
603 Dublin Avenue, Columbus, Ohio

Send us newest information on ☐ Standard LOW CHARGE Truck Mixers, Agitators, ☐ HIGH DUMP Models, ☐ Portable Hoppers, ☐ Auto-Pavers and Spreaders, ☐ Pumps, ☐ Mixers, ☐ Hoists, ☐ Carts.

Name_____

Address_____

Ransome Truck Mixers

6 Exclusive Features—each a distinct advantage

Write for information

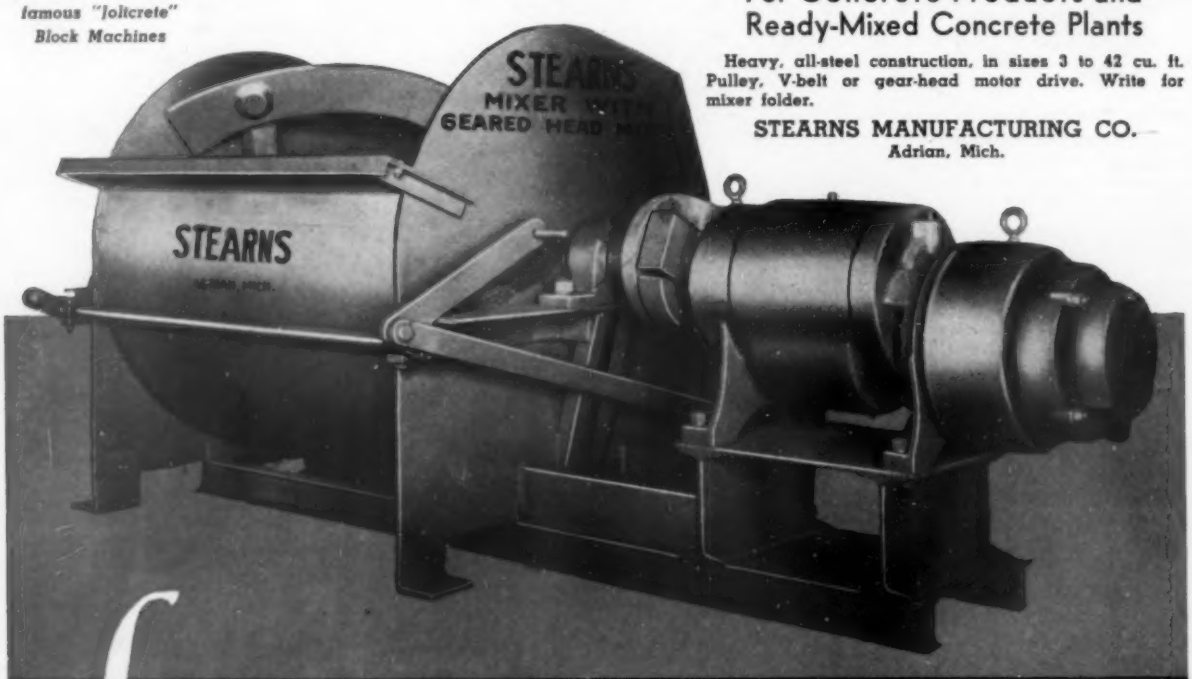
RANSOME CONCRETE MACHINERY COMPANY
DUNELLEN NEW JERSEY

Stearns also makes the famous "Joltcrete" Block Machines

For Concrete Products and Ready-Mixed Concrete Plants

Heavy, all-steel construction, in sizes 3 to 42 cu. ft. Pulley, V-belt or gear-head motor drive. Write for mixer folder.

STEARNS MANUFACTURING CO.
Adrian, Mich.



Stearns—the mixer with bar-type liners

BRICK AND BLOCK Made In One Plant

Single mixer supplies concrete for both block machine and concrete brick equipment

Mixer used to supply concrete for both block and brick machines. Note skip dump arrangement

WITHIN A PERIOD of less than two years, Lincoln Concrete Products, Lincoln, Ill., has shown a very satisfactory increase in business by the production of a quality product and the introduction of new types of units. Both concrete brick and concrete block of various sizes are made in this plant.

The plant is very efficiently laid out to get maximum use of the equipment. As shown in the illustrations, the concrete batch is elevated by a skip bucket to the second floor where it dumps into the 16 cu. ft. Dunn mixer. From the mixer the concrete flows by gravity through a chute which wyes out at the bottom with a flop gate at the junction to permit feeding either the Multiplex block machine or the Dunbrik machine which parallel each other with an aisle between. Sand and gravel are used in both the block and brick, using aggregates furnished by the Lincoln Sand and Gravel Co., with which company the owners are affiliated.

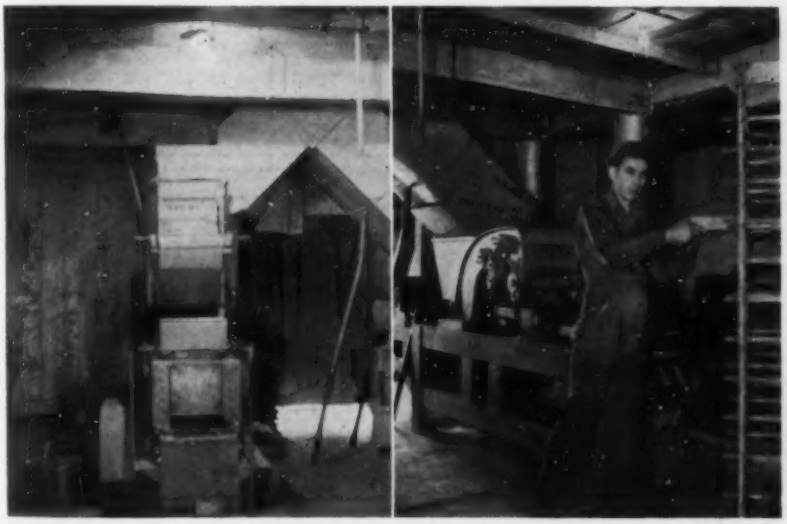
Capacity of the Multiplex block machine is about 1200 standard 8- x 8- x 16-in. or equivalent units in an 8-hr. day. The Dunbrik machine has a capacity of about 1400 brick an hour averaged over an 8-hr. day. Steel racks for the brick were furnished by Dunbrik, and the trucks used for block were made by the company, being their own design.

In addition to the standard concrete brick, the company is now making brick in various colors to meet a growing demand for this product.

Skip bucket which carries aggregates to mixer on second floor

All units are subjected to steam vapor in a curing room 45 ft. long. Steam is piped under 6 lb. pressure and released by petcocks placed about every 3 ft. along the pipe. Steam radiators also were installed within the curing room, and are used during cooler periods to maintain an even temperature for proper curing. The boiler is fired by a Simplex stoker which makes firing almost an automatic operation.

Partners of the company are: R. E. Weaver and Walter Spatz. George F. Young, formerly in the concrete products business for himself, is plant superintendent.



Left: Block machine which receives concrete from one leg of two-way chute. Right: Brick machine which is fed concrete from the other leg of chute

New Concrete Unit

HARRY ANDERSON, Edmonds, Wash., has developed a system of concrete house construction which provides two walls of 2-in. concrete blocks 8 in. apart, made so accurately in four sizes that they can be laid up without use of mortar, and alterations and additions can be made easily by re-laying the same material. After the walls are laid they can be sealed by spraying a paint on the outside and they may be plastered, kalsomined or papered on the inside.

Inventor of the plan is Robert Wells, 17257 Greenwood Place, Edmonds, who has erected a model home of this material there.

George Hagemann, Esperance machine shop operator, is building the first machine for commercial manufacture of the blocks. Its production will turn out units for several houses a week. This first machine will go to the Olympic Stone Co., Ballard, which firm has the contract to manufacture the product to supply five counties.

Concrete Brick

LAKELAND BRICK AND TILE CO., Lakeland, Fla., is manufacturing colored concrete brick and tile. Albert Henderson is proprietor.

Cinder Block

GUYAN CEMENT PRODUCTS CO., Pineville, W. Va., is completing a $10,000 plant at East Pineville to manufacture cinder-concrete building block.

Ready Mix Advertising

(Continued from page 72)

bulk, a 110-ton 3-compartment aggregate bin, and a batching capacity of 1000 cu. yd. in 8 hr. with two men.

Cement and aggregates are weighed in separate batchers, both on a single operating floor, but separated far enough apart so that a truck can be charged under each batcher at the same time. A carload of special brands of cement can be stored under cover on this batching floor.

Bulk cement is discharged from hopper-bottomed, bulk cement, cars into a screw conveyor feeding to an enclosed bucket elevator filling the cement bin. In anticipation of car shortages due to possible national defense priorities, the screw conveyor has spout fittings to receive bulk cement from box cars or in sacks. Usual practice is not to fill the bulk cement bin but to batch out the cement car as the bin is filling, thereby eliminating packing in the bin and subsequent arching. A standing time of 48 hr. is usually allowed on cement cars before charging demurrage. Aggregates received in trucks are elevated into the bin compartments.

W. R. Sostheim, president of New Albany Ready Mix Concrete, Inc., on the right, and one of his contractor customers

Both plants are enclosed for all winter operation and are equipped with live steam to heat the aggregates and the mixing water. No extra charge is asked for heated concrete on the theory that the availability of concrete in the Winter at no added price will help to sell unheated concrete the rest of the year.

The two plants are located five miles apart and the truck fleet is interchangeable between the plants. Thirteen truck mixers comprise the fleet, consisting of Rex and Smith mixers of 2-, 3-, 4- and 5-cu. yd. capacities. Variable capacities are desired in order to make a job come out even, without any unused capacity in a drum. Seven of the mixers are the high dump Smith type. Six new 3-cu. yd. mixers have been ordered to increase the fleet to 19. Chassis used are Diamond T and International.

Concrete is considered a manufactured product and, as a manufacturer, the corporation has avoided any additional service other than delivery to the job. One price has been established within a 10-mile radius of the plants with an additional flat increase per cu. yd. per mile outside this radius.

With seven government projects receiving concrete, including 50,000 cu. yd. for the Quartermaster Depot at Jeffersonville, the company has taken out sabotage insurance.

Mr. Sostheim's previous experience for over 20 years had all been along lines kindred to ready-mixed concrete, having served equipment concerns. He also acted as a specialist, established new plants and started them in business. Other officers of the company are M. G. Turley, vice-president and secretary, and S. D. Zenor, assistant general manager.

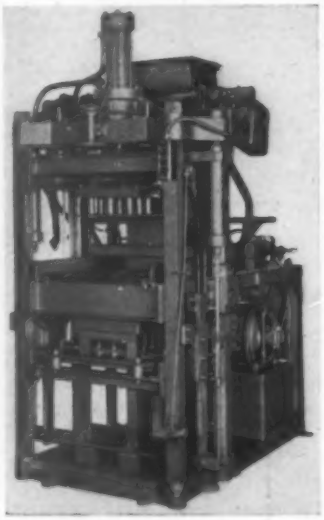
Vibrated, Lightweight Block

San Joaquin Valley Pipe and Construction Co., Chowchilla, Calif., has installed a vibrator block machine to make building block of volcanic ash and other lightweight aggregates under the trade name Vibralite concrete masonry. Jack Powell, manager of the company, has been studying the feasibility of expanding the scope of his company for some time and he declares that this new building block will fill a great demand in the San Joaquin valley. It will provide insulation against both heat and cold. The blocks will provide cool homes in summer and homes that will be easy to heat in the winter.

New Pipe Factory

Macon Concrete Pipe Co., Macon, Ga., is planning to build a new plant equipped with modern concrete pipe machinery. Howard F. Hill is in charge of operations.

HYDRAULIC VIBRA-PRESS



A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

SURE CONCRETE BRICK CAN BE MADE WITHOUT PALLETS ON THE

JACKSON CONCRETE BRICK MACHINE

Just Think What This Means in Dollars and cents saved in handling and upkeep as well as the cost of the pallets themselves.

Investigate today the most efficient and up to date concrete brick making equipment on the market.

JACKSON & CHURCH CO.
SAGINAW, MICH.

CONCRETE PRODUCTS
Consultation Service

In these pages, month after month, is published the most helpful information obtainable about the manufacture and sale of all kinds of concrete products. If you need further details about any of this material or about concrete products equipment our staff of engineer-editors will be glad to serve you. Producers everywhere are taking advantage of this extra service. Write us about your problems.

ROCK PRODUCTS
309 West Jackson Blvd. Chicago, Ill.

Concrete Burial Vault Meeting In Chicago

Convention in 1942 will be held in Cleveland with an exhibit of equipment and supplies

GENERALLY GOOD BUSINESS throughout the concrete burial vault industry was reported by members attending the annual convention at the Stevens Hotel, Chicago, Ill., May 13 to 15, inclusive. More prosperous business conditions stimulate sales of permanent burial protection as the public has more money to spend.

President Frank Mathies, New Haven, Conn., presided in his usual genial manner, but Ralph Meade, secretary, was absent due to a severe illness which has confined him to his home after a siege at the hospital. The association sent flowers and a telegram expressing a wish for his speedy recovery. E. C. Jeffries, Cleveland, served as secretary protem for the convention.

New Officers

Officers elected for the coming year included: Lowell K. Huber, president, Cincinnati, Ohio; Wilbert W. Haase, Forest Park, Ill., vice-president; and Ralph Meade, Cleveland, Ill., secretary-treasurer. E. C. Jeffries and Wilbert W. Haase were elected to the board of directors.

The morning of the first day's session was devoted to the presentation of reports by committees on Finance, National Advertising, Publicity, Vault Age, and the reading of the secretary's report.

At the round table luncheon, H. F. Gonnerman, head of the Portland Cement Association research laboratory, outlined routine studies of interest to the vault industry and the performance studies of various types of cement in structures and paving which will be carried out over a period of years. Paul Woodworth, engineer of the Concrete Products Bureau of the PCA, introduced the research engineers of the laboratory who later conducted parties on the inspection tour to show what the PCA is doing to make better concrete.

At the Wednesday session, L. J. Dunne, president of the Cook County Cemetery Superintendents Association, led off the morning session. H. A. Dahlquist introduced the speaker. Mr. Dunne urged closer contacts between local and national associations, and emphasized the importance of improved public relations. He also mentioned the cooperative efforts in the direction of standardization with the cemetery association.

MAYNARD C. WELLER, executive secretary of the National Funeral Directors Association, gave a splendid address on the benefits of association activities to the individual and the industry as a whole. He told about a survey of association activity which showed that only 5 percent of the membership of an association are really active, 15 percent are cooperative, and 80 percent just follow along. Mr. Weller introduced a note of caution by stating that the present defense boom may be followed by a corresponding deflation after the war.

Former president Hamilton, Cleveland, Ohio, reported on the Chicago and Washington, D. C., meetings at which he represented the burial vault association in the conference of all allied association groups, such as the cemetery superintendents and funeral directors, looking to the time when a general association will be formed through which all cooperative activities may be cleared.

After a spirited contest between Buffalo, N. Y., Toronto, Canada, Indianapolis, Ind., and Cleveland, Ohio, representatives, the convention finally voted in favor of Cleveland as the convention city.

The annual banquet and festivities were held Wednesday night at the Stevens Hotel. On Thursday members visited three local vault plants by bus to observe actual procedure.

Irrigation Products

COLUMBIA CONCRETE PIPE CO., Wenatchee, Wash, is operating a new branch plant, completed last winter, between Okanogan and Omak. It is designed to furnish all kinds of concrete products, including irrigation specialties; also sand and gravel.

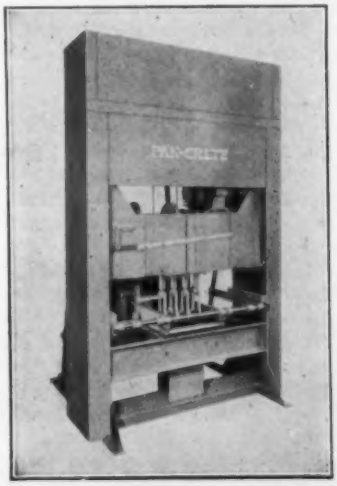
New Ready-Mixed Plant

W. G. BLOCK CO., Burlington, Ia., is erecting a batching plant and bins at 510 So. Main St., to produce ready-mixed concrete. Four mixer trucks will be used.

New Owner

HERBERT TURNER & SON, Boscobel, Wis., have sold their concrete culvert plant to Thos. P. Jordan, formerly of Durand.

A LOT OF MACHINE FOR A LITTLE MONEY

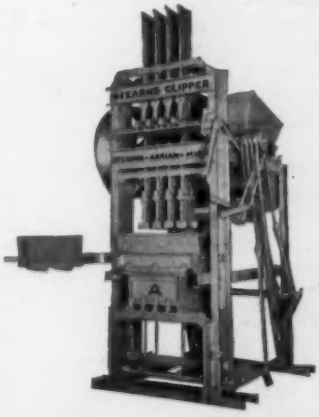


VIBRATION AND PACKING with

PAK-CRETE

BETTER BLOCKS AT LESS COST
PRECISION MADE—QUICK DELIVERY

KRAMER PRODUCTS CO.
INDUSTRIAL ST. . . . PEORIA, ILL.



"ANCHOR"

Complete equipment for making concrete, cinder and other light weight aggregate units, including engineering service for plants and revamping of old ones for more economical service. Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.
G. M. Friel, Mgr. Columbus, O.

Block for Steel City

(Continued from page 69)

mix of 75 percent Pottsco fine aggregate, ranging from ¼-in. down, and 25 percent coarse Pottsco ½- to ¼-in. A 1-cu. yd. Stearns mixer feeds the Joltcrete.

Gary, Ind., contractors have been sold on concrete block for foundations, and a large number of heavy block are used for this purpose. These block are made with a stone screenings aggregate, grading down from No. 4 mesh.

All block are steam-cured in long kilns extending out from the aisle in front of the block machines. About 6400 standard block may be cured in the eight kilns at the same time. About 2 lb. of steam are piped into the kilns from the Kewanee boiler.

Practically all sizes of block are made in sizes ranging from 4-, 6-, 8-, 10- and 12-in. widths. Blocks are made with a recess for steel sash, and a 10-in. block is produced for foundation corners which permits an interlocked joint with two blocks. A bull nose corner block is made with a single curved steel plate in the block machine form to eliminate any fins on the block as it comes from the machine.

In addition to these units, the company makes many specials; such as, chimney block and caps, manhole block and precast bottoms.

Officers of the company are C. H. Bullen, president; J. R. Newell, vice-president; Robert A. Ubbelohde, secretary-treasurer. Fred J. Koch is plant manager.

New Products Plants

THOMAS CONCRETE PIPE CO., Ada, Okla., has leased five acres at Gore and Frisco streets, Lawton, Okla., and will erect a $30,000 plant to manufacture concrete products. C. A. Thomas is president.

Vermiculite Concrete

NORTH CAROLINA STATE COLLEGE professor, William A. Scholes, has received a lot of newspaper publicity for making a concrete block with heat-treated vermiculite as the aggregate. It makes a lightweight block, which may be cut with a wood saw, and nails can be driven into it. A deposit of vermiculite has been discovered in North Carolina. Other deposits which have been developed are in Montana and Colorado. When the deposit at Libby, Mont., was discovered and the peculiar properties of the roasted vermiculite were noted, some 12 or more years ago, samples were sent to ROCK PRODUCTS. At that time the editor called attention to the possibility of making lightweight concrete with it as an aggregate. This has long been done using not only portland cement but gypsum as a binder. Such products are much used for insulation and sound-absorbing. The material is too rare and high priced for extensive use as an aggregate.

Honor Inventor

CHARLES W. AKERS, Baltimore, Md., well-known inventor of the Breeko Block, has been honored with the presentation of the Certificate of Merit by The Franklin Institute, Philadelphia, Penn., at the annual Medal Day exercises. In making the award, the Institute announced, "The Breeko Block invented by Mr. Akers not only fulfills the primary purposes of other building blocks, but offers a number of advantages in addition. Among these advantages are rapidity and ease of installation, acoustical improvement, and economy of treatment."

Magnesite Expansion

RADEMAKER CHEMICAL CORP., Eastlake, Mich., has obtained an RFC loan of $300,000 to build and equip a plant for the manufacture of dead-burned magnesite, a material extensively used in the construction and maintenance of open-hearth steel furnaces.

Non-Stop Pour

SALEM CONCRETE & SUPPLY CO., Salem, Ohio, considers its record pretty good for ready-mixed concrete in a small city. It completed on a Saturday night a non-stop concrete pouring job for a local garage begun on the preceding Wednesday night.

Big Mexican Contract

CONSTRUCTION AGGREGATES CORP., Chicago, Ill., has obtained the contract from the Navy Department, Republic of Mexico, to construct fortifications at Manzanillo, Mexico.

Concrete Queen!

THERE HAVE BEEN peach queens, orange queens, apple, peony and other queens, but Bellefontaine, Ohio, is to have a concrete queen. Robert O'Neil, chairman of the queen committee of the Bellefontaine Junior Chamber of Commerce, has sought to select a queen from the 14 high schools in the county to appear as candidates in the selection of a queen for the golden jubilee.

The junior chamber's golden jubilee here on June 13 will mark the celebration of the laying of the first concrete street pavement in the United States. The street is yet in service here. The occasion will be in the nature of a county-wide homecoming and a monument will be unveiled in the courthouse yard.

Gypsum Calcination

FOR THOSE who want to understand the mysteries of gypsum products, there is a new technical paper, No. 625, "Thermodynamic Properties of Gypsum and Its Dehydration Products," by K. K. Kelley, J. C. Southard and C. T. Anderson, Bureau of Mines, U. S. Department of the Interior (price 10c). This is probably the most important American contribution on the subject.

Six substances in the $CaSO_4$-H_2O system were identified and investigated; and they were found to have unique and reproducible thermodynamic properties—one $CaSO_4 \cdot 2H_2O$, two $CaSO_4 \cdot \frac{1}{2} H_2O$, two soluble $CaSO_4$'s and one insoluble $CaSO_4$. Commercial plasters appear to be mixtures of the two $CaSO_4 \cdot \frac{1}{2} H_2O$, which accounts for some of their vagaries.

The data include an analysis of the common kettle method of gypsum calcination (furnished by W. C. Riddell, Pacific Coast Portland Cement Co.) using both gas and oil fuels. Approximately 90 percent of the total heat is accounted for but only about 10 percent is considered usefully employed in the dehydration of the gypsum.

Ready-Mixed Concrete

ADAMS BROS., Janesville, Wis., have introduced ready-mixed concrete into this city, using two truck mixers. The trucks were used last winter on a construction job the firm had at Camp Grant.

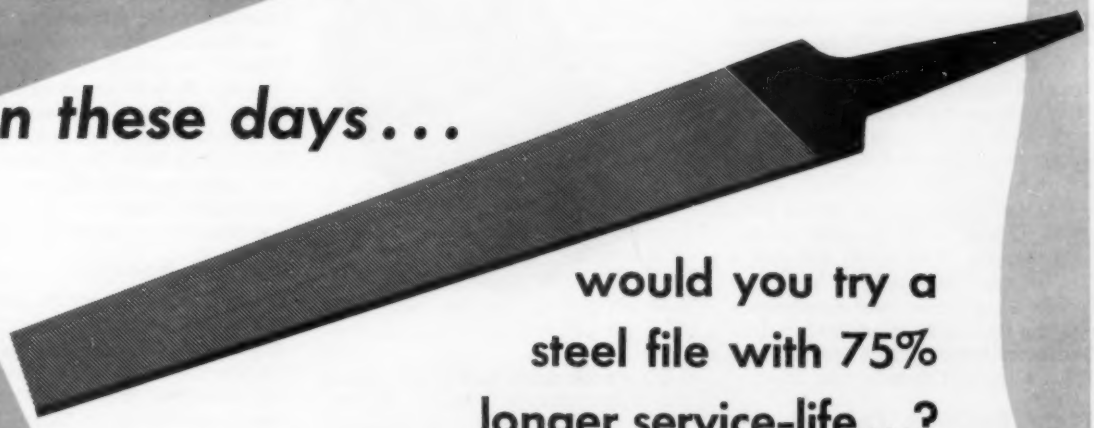
Add Third Block Machine

SPICKELMEIER FUEL & SUPPLY CO., Indianapolis, Ind., has purchased its third Stearns Joltcrete machine, a Model No. 9. The first Joltcrete was installed in February, 1938, and the second in November, 1938. Stearns Manufacturing Co., Adrian, Mich., has announced that five companies installed their second Joltcrete machine in 1940, and 28 companies bought Joltcrete units for the first time in 1940.

•

RIVERSIDE BRICK AND TILE CO., Knoxville, Tenn., has started operation at a plant on Front street under Henley Bridge. Concrete brick of various colors, block, pipe, tile, roofing tile and special products are manufactured. Victor H. McLean is proprietor.

In these days . . .



would you try a steel file with 75% longer service-life . . . ?

Of course you would—because now more than ever before you realize the necessity for both economy and steadier production. And the same principle applies to Hazard LAY-SET Preformed.

HAZARD LAY-SET *Preformed*

● Compared with the service-life of non-preformed rope, Hazard LAY-SET Preformed frequently makes almost unbelievable records. And with good reason, too, because—

Being preformed, LAY-SET possesses extreme resistance to fatigue. That makes it *last longer*. Longer service-life means fewer machine shutdowns for rope replacement. And that means steadier production; more productive man-hours.

Then, too, Hazard LAY-SET Preformed is easier, faster and *safer* for workmen to handle. It is more flexible. It doesn't fight the man who is trying to work with it. Worn and broken crown wires don't wicker out to jab workmen's hands.

Learn the dollar value of Hazard LAY-SET Green Strand by putting a piece on your machine and keeping your own record of comparative performance. All Hazard ropes identified by the Green Strand are made of Improved Plow Steel.

HAZARD WIRE ROPE DIVISION • WILKES-BARRE, PENNSYLVANIA

Established 1846

AMERICAN CHAIN & CABLE COMPANY, INC.

District Offices: New York, Chicago, Philadelphia, Pittsburgh, Fort Worth, San Francisco, Denver, Los Angeles, Atlanta, Tacoma

ACCO

Install Screw Classifiers

CALIFORNIA ROCK AND GRAVEL CO., Pleasanton, Calif., has installed at its Elliott plant two Wemco screw type sand classifiers, made by the Western Machinery Co. The capacity is 60 tons per hour of sands running from very fine to 3/16-in. with a water consumption of about 600 gal. per min.

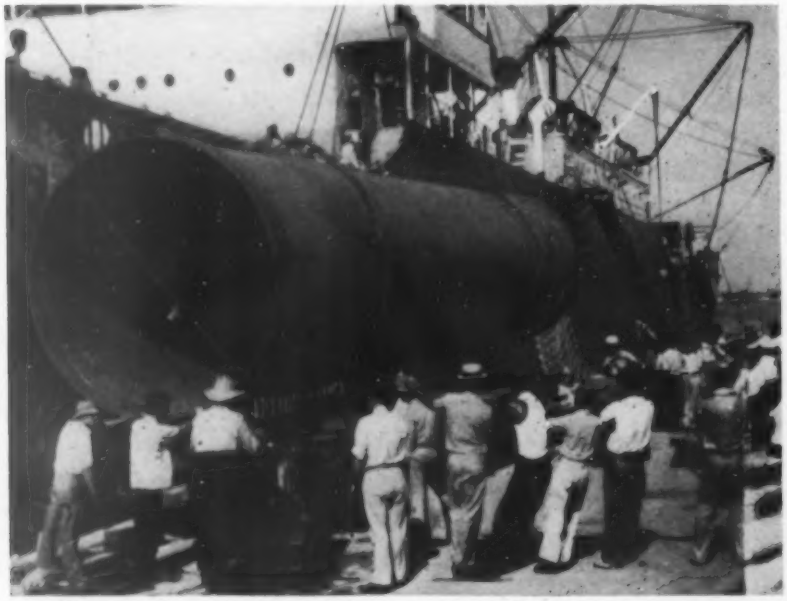
The two classifiers are 48 in. x 25 ft. 6-in. long, with Simplex double pitch screws. The units are driven by 7½-hp. Gearmotors and are equipped with push button magnetic starting switches, spur gear reduction, hand driven lifting devices, deep flight shoes and flared tanks.

Light Colored Cement

MISSOURI PORTLAND CEMENT CO., St. Louis, Mo., announces a new light shade portland cement, known as "Verilite." Because of its extreme lightness in color and because of its economy, the manufacturer says Verilite can be widely used on commercial, industrial and institutional buildings for architectural concrete such as art marble, cast stone and terrazzo. It also has a wide range of uses in all kinds of construction, such as driveways, floors, mortars, pools, porches, steps, stucco, walks, bridge heads, center lane markers, curbings, safety islands, "slow" traffic zones, traffic signal towers, "warning" zones and swimming pools.

Missouri Portland Cement Co. started two years ago to develop such a product. The company's geologists, research chemists and manufacturing organization collaborated in seeking the answer. New raw materials were discovered, tested and discarded time after time. Hundreds of combinations were set up and tested, then rejected or revised. Rigid laboratory control and high specification standards guided the project, yet ever present was the necessity for ultimate product economy.

After a year of experimenting, the essential raw materials had been found and a product meeting all requirements was produced under laboratory control. The product then was tested under actual field conditions, while new equipment for large-scale manufacturing of the new light-shade cement product was designed and installed. Verilite easily accepts pigmentation when colored concrete or mortar is desired, according to the announcement.



Unloading section of new kiln for Puerto Rico Cement Corp., plant at Guaynabo, Puerto Rico. It is part of an 8½- x 10- x 300-ft. Allis-Chalmers kiln, equipped with air quenching cooler, now being installed to double capacity of this government-owned cement plant

Products Promotion

MARBLE CLIFF QUARRIES CO., Columbus, Ohio, was one of five companies supporting a free garden school promoted by a local newspaper. Four-days sessions were held at a local movie theater, and everyone interested in gardening was invited. Marble Cliff Quarries Co. sells not only agricultural lime and limestone, but asphalt-coated stone for garden driveways and walks.

Safety Record

WOODVILLE LIME PRODUCTS CO., Woodville, Ohio, has been awarded the much coveted Joseph A. Holmes Safety Certificate for its exceptional accident-free record. The announcement was made by Daniel Harrington, U. S. Bureau of Mines. Specifically, the citation for the Woodville company is for operating its quarry for approximately 600,000 man-hours without a lost-time accident. The period covered was from January 1, 1936 to December 5, 1940.

Pennsylvania Marble

UNION LIMESTONE CO., Hillsville, Penn., is reported to have uncovered a bed of marble 6 to 21 ft. thick in five or six color combinations suitable for architectural purposes. The Shaffer Marble Co. has been incorporated to work the newly discovered deposit, said to contain 3,000,000 tons. Limestone has been quarried in this district, largely for steel and cement plants, for more than 100 years. Rich veins of coal frequently are found below the clay overburden, and sometimes a thick layer of shale is found above the limestone. There are two veins of limestone—gray above, and blue below — which formerly were quarried separately. They now are quarried together. Often, in the land being quarried, oil wells keep pumping rich crude. The oil and limestone have been a source of wealth to many landowners of the Hillsville area. The marble, quarrymen report, lies directly above the limestone.

New Location

LICKING GRAVEL CO., Newark, Ohio, has resumed operations at a new location two miles north of Newark. The company, previously located off South Sixth street, suspended operations three months ago when gravel beds used by the firm were included in the Licking river flood control project. B. H. Frasch, former division engineer of the state highway department, is general manager of the company and said that two shifts will be used until back orders are caught up.

Alleged Violation of Wage-Hour Law

ADMINISTRATOR of the Federal Wage-Hour Law has filed an injunction suit in the Federal District Court, Washington, D. C., seeking to enjoin the Smoot Sand and Gravel Co., Washington, D. C., against alleged violation of Sections 6, 7 and 11(c) of the law. These sections deal with minimum wages, maximum hours and maintenance of necessary records. According to V. P. Ahearn, executive secretary, National Sand and Gravel Association, this complaint marks the first time that the Administrator has used Section 17 of the law against any member of the sand and gravel industry.

The Administrator seeks a judgment restraining the company from violating the Act on the counts named, and if this were granted, the way would be opened up for the filing of employee suits under Section 16(b) of the law which carries provisions for the awarding of liquidated damages and for other costs to be assessed against the employer.

City Warehouse

LEHIGH PORTLAND CEMENT CO., Metaline Falls, Wash., plant will erect a warehouse and packing plant at E. 3204 Front St., Spokane, Wash. The plant will consist of five concrete silos approximately 16 ft. in diameter and 50 ft. high, a two-story packing plant about 30 x 30 ft., and a warehouse 30 x 100 ft. Approximate cost of construction, without machinery or equipment, is $60,000. The slipform method of construction will be used on the silos, operating 24 hours a day, and completion is expected within four months.

The company's main storage will be continued at the Metaline Falls plant, with shipments maintaining the 7500-bbl. capacity of the Spokane plant. The cement will be shipped here in bulk in special 150,000-lb. capacity cars, about three times the normal car capacity. It will be carried by screw conveyors from cars to storage silos, from where it will be moved by additional screw conveyors to the packing plant for sacking or delivery in bulk. The warehouse will be used for storage of sacked cement and for supplies necessary in the handling of cement.

Labor Handbook

UNITED STATES Department of Labor, division of labor standards, has issued as Bulletin No. 39, Part 1, a "Handbook of Federal Labor Legislation," which every employer who comes under any of the federal labor acts will find a necessity. It is published in loose-leaf form, with a binder, and is priced at 35c (for sale by Superintendent of Documents, Washington, D. C.) The text is conveniently arranged and there is a very fair index.

Smelter Union Wins

AMERICAN LIMESTONE CO., Harriman, Tenn., quarry workers voted to have the International Union of Mine, Mill and Smelter Workers represent them, in an election conducted by the National Labor Relations Board. The vote was 71 for, 5 against, 7 challenged, 7 "not voting." This union was selected, probably, because of the affiliation of the company with the American Zinc Co.

Short Shutdown

MANITOWOC PORTLAND CEMENT CO., Manitowoc, Wis., was shut down two weeks in April for repairs and general overhauling, which is said to be the shortest annual shutdown in several years. Large present demands for cement are the reason for the shortest possible interruption to production.

The Sure Sign of a

Satisfied Customer

J. C. O'Connor & Sons, Inc., Peru, Indiana, large sand and gravel plant operators, bought their first Deister PLAT-O Vibrating Screen in 1936 . . . since then, have added—one at a time—3 more PLAT-O Screens to their operation. When customers like this one order and re-order, it's a sure sign that they're satisfied . . . that they're getting faster and more economical sizing with Deister PLAT-O Vibrating Screens. PLAT-O's powerful positive high speed vibrating mechanism is your assurance of accurate, fast grading. Automatic screen cloth tension, oil lubrication, simple rugged construction, fully cushioned vibration . . . your assurance of greater dependability and minimum maintenance costs. Be sure the vibrating screen you buy offers these advantages . . . be sure it's a PLAT-O.

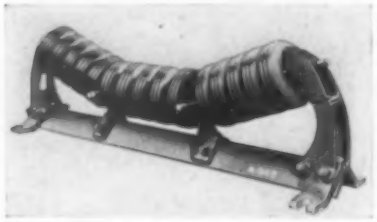
Top: View of the O'Connor plant at Peru. Supt. Ray Tucker says, "These Deister Screens are very dependable . . . give mighty good service and do the work in nice shape. Maintenance expense is low compared with other screens."

DEISTER MACHINE COMPANY • FORT WAYNE, INDIANA

NEW MACHINERY * NEW EQUIPMENT

Pneumatic Rollers for Belt Conveyor Carriers

STEPHENS-ADAMSON MFG. CO., Aurora, Ill., has developed a pneumatic roller for carriers on belt conveyors. These carriers are specially designed for use under loading spouts and in belt feeders where the impact of heavy bulk loads subject both conveyor belt and carrier to abnormal strains and wear. To cushion the impact of materials (and thereby prolong belt life), the rollers in these



Roller for use under loading spouts

carriers are made up of a series of pneumatic rubber units, 6-in. in diameter, suggestive of miniature automobile tires.

The rollers in the impact carriers are mounted on the steel hub in which bearings and shaft are housed. Roller units have thick, wear-resisting treads and are inflated and permanently sealed to prevent loss of air. The assembly is built for easy servicing and quick replacement of damaged units.

Tractor Tire To Move Materials

THE B. F. GOODRICH CO., Akron, O., has brought out a special pneumatic rubber tire for use on industrial tractors moving materials.

Called the industrial tractor type Silvertown, the tire is designed to equip the traction wheels of small farm type tractors which because of their mobility and speed are finding wide acceptance in industry.

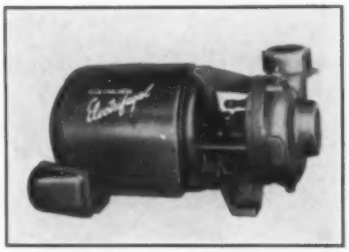
Available in two sizes, 8-24 and 9-24, the new tire features an unusually thick tread providing adequate traction for off-the-road service as well as long life on highways, ramps and other paved surfaces.

Strengthened with Duramin, the combination of chemical ingredients used to impart long life and durability to rubber, the tire is expected to have many applications on industrial tractors moving raw materials and finished goods.

Combined Pump and Motor Unit

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., has brought out what has been termed an "Electrifugal" pump, which is a centrifugal pump designed as a complete pump and motor unit on one shaft and one housing. This recently designed pumping unit has a special motor with a one-piece cast iron motor yoke and pump bracket. The feet are cast integral with the housing and bracket and extend under the entire unit instead of under the motor only.

The special motor design meets NEMA specifications for splash-proof motors. Totally enclosed, fan-cooled motors and explosion-proof motors are also available in the "Electrifugal"



Motor and centrifugal pump assembled as one unit

type. This pump is now obtainable in sizes from 1-hp. to 10-hp. inclusive at 3500 r.p.m. and from ¾-hp. to 7½-hp., inclusive at 1750 r.p.m. for heads up to 160-ft. Larger sizes of this type are in the process of design.

Spiral Packing

GREENE, TWEED & CO., New York, N. Y., has developed a high-pressure spiral packing with the outer layer impregnated with lubricant forced into the packing by a special hot pressure process. The lubricant is a graphite grease.

This packing is made of closely woven asbestos cloth with a center block laid up against a flat strip of heat-resisting, resilient red rubber. The cover or wear face is firmly bonded to the center to make a strong square-cornered packing which is then spiraled on a mandrel and vulcanized to retain its shape before the lubrication process is applied. It is said to be specially adapted for reciprocating rods and plungers of steam engines and pumps, air and gas compressors, and other machinery.

High Discharge Truck Mixer

THE RANSOME CONCRETE MACHINERY CO., Dunellen, N. J., has announced their new "Hi-Up" truck mixer designed for a higher point of discharge and differing in several fundamentals from present designs.

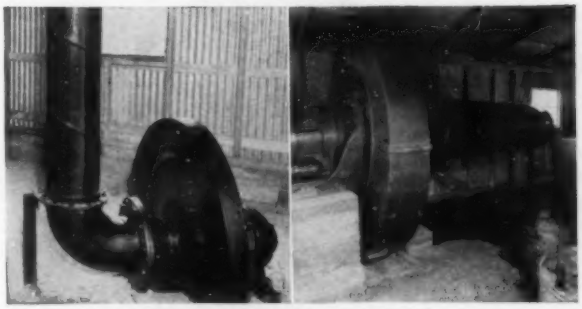
Drum rollers of the truck mixer are positioned under the center of gravity of the drum, practically balancing the load and relieving the strain on the front pedestal bearing. This provides the machined drum track around the center of the drum which tends to act as a reinforcing band where the impact of the intake load is the heaviest and eliminates the long span of light steel drum shell found where the drum track is at the discharge end of the drum and the pedestal bearing at the front. Accessibility to all operating parts is claimed by the manufacturer.

Because there are no drum rollers

Truck mixer with drum rollers positioned under center of gravity of drum

YOU GET ALL-OUT PERFORMANCE FROM NAYLOR LIGHT-WEIGHT PIPE

Greater Strength for High or Low Pressure Lines



Exclusive Safety Features

Economies in Transportation, Handling and Maintenance

No other light-weight pipe can give you the ALL-OUT performance provided by Naylor's exclusive Lockseam Spiralweld structure. It is ideal for high or low pressure air and water lines. Its extra strength and safety enable you to use Naylor on applications usually requiring heavier-wall pipe. Sizes: 4" to 30" in diameter. Complete fittings and fabrication service.

WRITE FOR NAYLOR CATALOG
OR SEND SPECIFICATIONS FOR QUOTATION.

NAYLOR PIPE COMPANY
1237 EAST NINETY-SECOND STREET
CHICAGO, ILLINOIS

NAYLOR LOCKSEAM SPIRALWELD PIPE

MORE PERFORMANCE PER POUND—MORE FOOTAGE PER SHIFT!

67 POUNDS

GARDNER-DENVER S-73 SINKING DRILL

- Speed and power to drill faster, in harder ground.
- Uses no more air than the average 55-lb. drill.
- Ability to rotate in tight or fitchery ground, due to powerful four-pawl rotation.
- Excellent holding characteristics enable the drill-runner to maintain a high rate of drilling speed throughout the shift.

31 POUNDS

GARDNER-DENVER S-33 SINKING DRILL

- Speed and reliability that lift it far out of its weight class.
- Light in weight for easy holding in the hard-to-reach places.
- Same four-pawl rotation used in the heavier Gardner-Denver drills.
- Ability to clean the hole thoroughly with live air at full line pressure.

Choose the Gardner-Denver S-73 Sinker for speed on your general operations—or choose the Gardner-Denver S-33 Sinker for versatility on your lighter jobs. They'll both give you greater footage with lower air consumption. For full information, write Gardner-Denver Company, Quincy, Illinois.

GARDNER-DENVER

Since 1859

at the discharge end of the mixer the mixer frame is shorter offering a more satisfactory mounting on truck chassis. It may also be backed closer to forms and discharged without the use of the chute although a two-piece chute is standard equipment. It is designed for combination top or end loading.

Testing Sieve Shaker

NEWARK WIRE CLOTH Co., Newark, N. J., has developed the "End-Shak" testing shieve shaker to meet the Bureau of Standards requirements. These recommendations state that 150 strokes per minute be employed,

Electrically-operated testing sieve shaker which has a combined reciprocating and turning motion

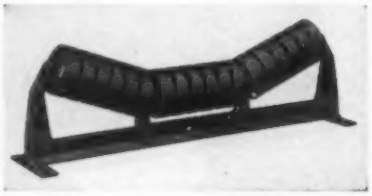
and that the sieves revolve approximately one revolution per minute.

Features claimed for this testing shieve shaker include the following: sieves are given a combined reciprocating and turning motion which causes the sample to spread uniformly over the entire surface of the sieve; sudden jarring motions are eliminated; the operation is smooth and quiet as the nest of sieves reciprocates in a direction lengthwise of the gear box and the mechanism is entirely enclosed and operates submerged in oil; and the sieves are held in place by a novel hold-down device which permits them to be easily and quickly put in place and removed.

Rubber-Tread Impact Belt Conveyor Idler

LINK-BELT Co., Indianapolis, Ind., has designed a troughing type rubber-tread impact idler to absorb the shock of receiving heavy, lumpy, and rough materials at the loading point.

It is said that the cushioning effect of the rubber-to-rubber contact between belt and idler will prevent cutting, bruising, and scuffing of the belt, and will protect the bearings and framework from shock, prolonging the life of both belt and the idler. Other features claimed for the new idler are: less breakage of fragile material, such as coke, friable



Belt conveyor idler absorbs shock

coal, etc.; the belt is kept clean; and corrosion and abrasion are resisted.

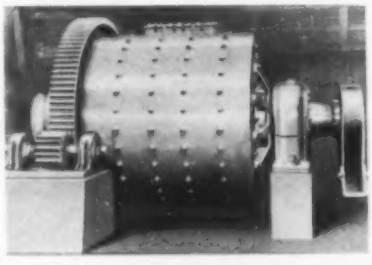
Molded rubber-tread rolls, 6-in. diameter, are firmly secured to a roller-bearing-equipped tube by set screws through malleable iron spacers which clamp over reinforced rubber hubs.

The new idlers are available for belt widths of 14 to 48-in. Larger diameter rolls can also be supplied, as well as rubber-tread impact rolls for flat-belt conveyor idlers.

Rib Cone Ball Mills

STRAUB MANUFACTURING Co., Oakland, Calif., has placed on the market a new line of its Champion all-steel, rib-cone ball mills. These mills come in various lengths, and are designed so that they may be increased in length at any future time by ordering factory made parts.

There are six styles, differing mainly as to length and as to construction



Standardization of design makes possible an increase in capacity of mill by using longer shell

of shell ends and method of attachment to heads. For example, Style WF has one head welded to the shell while the other end of shell has an integral flange to which the other head is bolted. Flange faces are machined with a step joint to relieve bolts from shearing strains. This mill may be converted to style WFF which has a longer shell.

Trunion bearings are large babbitted self-aligning type mounted in saddles. The saddles rest on a steel sole plate which extends under the pinion shaft bearings. Adjusting screws on the sole plates permit accurate meshing of the gears. The large diameter pinion shaft is furnished with sealed self-aligning S. K.F. ball or roller bearings. As the pinion bearings are also mounted on the mill sole plate, the gear thrust load is not taken on the hold down bolts.

Rubber-Tired Wagon Drill

SULLIVAN MACHINERY Co., Michigan City, Ind., has brought out a wagon drill which mounts 55 to 75-lb. hand rock drills, substantially increasing drilling footage over hand operation.

Portable wagon drills supplant hand drilling equipment

It is pneumatic-tired and drills at any angle. An independent air motor operating the feed gives a wide range of pressures with ample power.

Wagon drills are built in light, medium and heavy weight models with 4-, 6-, and 10-ft. steel changes.

Flexible Rubber Hose

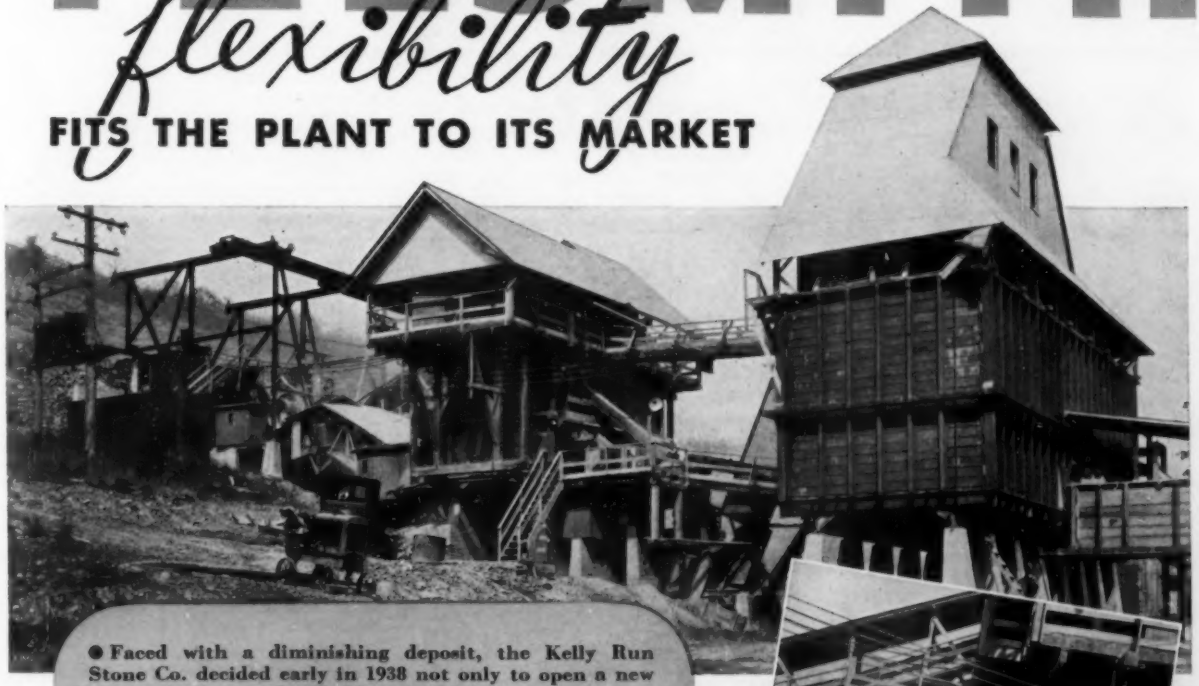
THE MANHATTAN RUBBER MFG. DIVISION, Raybestos-Manhattan, Inc., Passaic, N. J., has brought out the Condor Homo-Flex hose, which is claimed to combine balance, homogeneity, and flexibility to a high degree.

Principles of construction involved in Homo-Flex hose were first applied to conveyor belts. Among the advantages claimed for this hose are: extreme flexibility, lightness in weight, ease of handling, inseparable covers and plies, uniform diameters, and less elongation and expansion.

TELSMITH

flexibility

FITS THE PLANT TO ITS MARKET



● Faced with a diminishing deposit, the Kelly Run Stone Co. decided early in 1938 not only to open a new quarry higher on South Mountain but to erect a completely new 125-150-ton-per-hr. rock crushing plant about six miles southeast of Wilkes-Barre, Pa.

Their well established market demanded products to suit widely varying specifications. This called for a plant of extreme flexibility. They have just that. Its design and construction was supervised by their Gen. Mgr., B. C. Banks, with Telsmith's engineering co-operation.

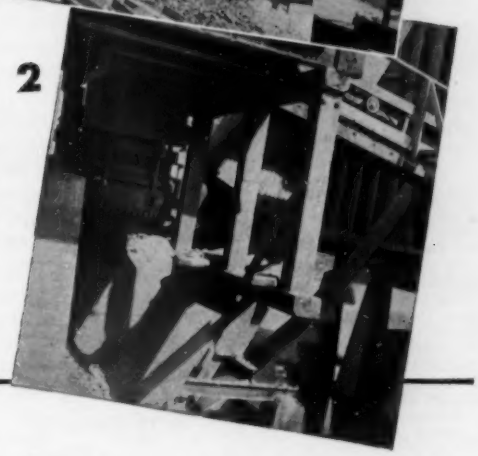
In large part this plant's flexibility is due to its Telsmith equipment. The 72″ x 25′ Telsmith Roller Bearing Rotary Scalping Screen insures quality grading and cleanliness. Plus 4″ rock or tailings from scalper are chuted to the 13-B Telsmith Gyratory Secondary Crusher (Fig. 1) and its product in turn goes back to the scalper. Thus either ballast or modified base coarse stone may be produced in the scalping bin and trucked from there. The "parallel pinch" of the Telsmith Gyratory quickly reduces large pieces at top of bowl. Operating at an eccentric speed of about 220 rpm, its capacity is high. And its super-strong steel frame and crown and unbreakable shaft insure continuous output.

A No. 36 Telsmith Gyrasphere Crusher (Fig. 2) serves as a finishing crusher, taking raw feed from scalping bin, also tailings and unwanted sizes from main bin. By varying percentage of feed and crusher's settings, proportions are controlled and various sizes in the amounts needed are produced.

Finishing screens are two 4′x10′ Telsmith Double Deck Pulsators, each delivering 3 sizes to main bin compartments on each side of elevator—6 possible sizes in all.

Do you want flexibility in your plant, with low-cost operation and maintenance? Write for Bulletin Q-11.

1



2

SMITH ENGINEERING WORKS, 508 EAST CAPITOL DRIVE, MILWAUKEE, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

50 Church Street, New York City
211 W. Wacker Drive, Chicago, Ill.
713 Commercial Trust Bldg., Philadelphia, Pa.
81 Binney Street, Cambridge, Mass.
Vern Wheeler Eqpt. Co., Columbus, Ohio
Brandeis M. & S. Co., Louisville, Ky.
Charleston Tractor & Eqpt. Corp., Charleston, W. Va.
Roanoke Trac. & Eqpt. Co., Roanoke, Va.
North Carolina Eqpt. Co., Raleigh and Stateville, N. C.
Wilson-Weesner-Wilkinson Co., Knoxville and Nashville, Tenn.
G. F. Seeley & Co., Toronto, Ont.

FINANCIAL NOTES

RECENT DIVIDENDS ANNOUNCED

Ohio River Sand Co., 7% pfd.	$1.00	June 1
Penn-Dixie Cement, 7% pfd. A	1.50	June 5
Southern Phosphate	.15	June 16
U. S. Gypsum Co.	.50	July 1
U. S. Gypsum Co., pfd.	1.75	July 1

•

UNITED STATES GYPSUM Co., Chicago, Ill., has reported net sales of $50,694,233 for the year ended December 31, 1940, as compared with $43,334,697 for a like period in 1939. Operating profit in 1940 was $13,616,895 as against $11,011,602 in 1939. Consolidated net profit for the first quarter in 1941 was $1,341,773 as compared with $1,062,921 for a similar period in 1940.

•

CANADA CRUSHED STONE Co., LTD., Hamilton, Ont., had a net profit of $37,833 for the year ended December 31, 1940. This compares with a profit of $12,468 for a like period in 1939. President C. M. Doolittle reports that a heavy demand for crushed stone to build airports resulted in a more than average yearly tonnage.

•

CONSOLIDATED ROCK PRODUCTS Co., Los Angeles, Calif., reported net sales of $3,191,672 for the year ended December 31, 1940. In 1939 sales were $2,703,470. In 1940 there was a net loss of $209,755 after bond interest and discount which compares with a net loss of $386,614 in 1939.

•

MARBLEHEAD LIME Co., Chicago, Ill., presented the following income account for the years ended November 30:

	1940	1939
Net sales	$1,293,169	$1,255,968
Cost of sales	1,068,161	1,065,753
Sell., etc., expense	179,328	179,846
Operating profit	45,680	10,369
Idle plant expense	5,647	2,877
Balance	40,033	7,492
Bond int., etc.	29,745	29,631
Fed. income tax	1,700	.....
①Net profit	8,588	d 22,139
Surplus, Dec. 31	132,962	170,855
Adjustments	cr 24	15,755
Surplus, Nov. 30	141,574	132,962
Times chgs. earn.:		
Before income tax	1.35	0.25
After income tax	1.29	②
Times chgs. & pfd. divs. earned	0.72	0.14
Times pfd. divs.	0.37	.....
Earn., pfd. share	$2.57	Nil
No. of pfd. shares	3,335	3,430

① After depreciation and depletion: 1940, $76,372; 1939, $73,245.

② No provision for income taxes required.

RIVERSIDE CEMENT Co., Los Angeles, Calif., called a special stockholders' meeting on May 26 to vote on a plan for refunding the first preferred cumulative 6% stock. The plan contemplates the exchange of the present no par 6% issue for a new issue of 5% cumulative preferred. Stockholders who do not wish to exchange their stock will be entitled to the regular redemption price of $102.50.

•

PACIFIC PORTLAND CEMENT Co., San Francisco, Calif., reports the following statement of income for the years ended December 31:

	1940	1939
Net sales	$3,703,030	$3,631,656
Cost of sales	2,928,315	2,724,424
Sell., etc., expense	497,050	538,316
①Oper. profit	277,664	368,916
Margin of profit	7.50%	10.16%
Other income	33,460	30,804
Total income	311,124	399,720
Other deduction	70,781	44,638
Fed. income tax	50,770	54,380
Net income	189,572	300,702
Preferred divs.	228,304	278,943
Surplus for year	d 38,732	21,759
Earn. surp., 1-1	94,923	73,163
Surplus credits	②278,943	.....
Earn. surp., 12-31	335,134	94,923

① After depreciation and depletion: 1940, $295,830; 1939, $285,643.

② Transfer of dividends paid in 1939 from earned surplus to reduction surplus in accordance with certificates filed with secretary of State of California.

President J. A. McCarthy in the annual report stated, "While unfavorable price levels adversely affected net income from operations during the past year, the present outlook is for firmer prices and a continuing upturn in construction."

•

OHIO RIVER SAND Co., Louisville, Ky., had a net income of $67,229 for the year ended December 31, 1940, as compared with $13,921 for a like period in 1939. Net sales were $484,686 in 1940 as against $375,006 in 1939.

•

IDEAL CEMENT Co., Denver, Colo., reported a net income of $1,931,318 for the year ended Decmber 31, 1940, as against $2,277,606 in a similar period of 1939.

•

NORTH AMERICAN CEMENT CORP., New York, N. Y., had a net loss, after depreciation, depletion, interest and taxes, of $224,774 for the year ended March 31, 1941. This compares with a net loss of $415,387 for first quarter in 1940.

PEERLESS CEMENT CORP., Detroit, Mich., had a net profit of $17,909 for the first quarter in 1941. This compares with a deficit of $21,011 for the first quarter in 1940.

•

PENNSYLVANIA GLASS SAND Co., Lewistown, Penn., reported a net profit after charges and taxes of $181,829 for the first quarter in 1941 as compared with $152,813 for a like period in 1940.

•

AMERICAN AGGREGATES CORPORATION, Greenville, Ohio, had the following consolidated income account for the years ended December 31:

	1940	1939
Net sales	$1,583,039	$1,380,754
Cost of sales	995,274	954,306
Sell., etc., exp.	171,642	153,271
Deprec. & depl.	183,287	184,706
Operating profit	232,836	88,471
Margin of profit	14.71%	6.41%
Allied oper. inc.	46,635	76,384
Other income	63,523	107,807
Total income	342,993	272,662
Interest	12,583	20,744
Loss, assets sold	32,972	5,254
Fed. income tax	96,473	55,573
Net income	200,965	191,901
Preferred divs.	43,313	.....
Common divs.	56,288	.....
Surplus for year	101,364	191,091
Times pfd. divs.	2.49	2.21
Earn., pfd. share	$17.40	$15.46
No. of pfd. shares	11,550	12,364

•

NAZARETH CEMENT Co., Nazareth, Penn., reported a net profit of $125,899 for the year ended December 31, 1940, as against $163,300 for the calendar year 1939.

•

NEW ENGLAND LIME Co., Adams, Mass., had net sales of $502,054 for the year ended December 31, 1940. In the calendar year 1939, net sales were $535,428. Net income in 1940 was $21,914 as against $29,973 in 1939.

•

DIAMOND PORTLAND CEMENT Co., Middlebranch, Ohio, reports a net income of $108,184 for the year ended December 31, 1940, as compared with $45,671 for a like period in 1939.

•

CONSOLIDATED CEMENT CORP., Chicago, Ill., reports net sales of $405,211 for the first quarter in 1941 as against $227,897 for a like period in 1940. Net loss for the first quarter was $8,490 as compared with a loss of $79,911 for this period in 1940.

•

SOUTHERN PHOSPHATE CORP., Baltimore, Md., had net sales of $1,304,330 for the year ended December 31, 1940. In 1939, net sales were $972,106, according to reports to SEC.

•

NATIONAL GYPSUM Co., Buffalo, N. Y., reports net sales of $4,338,188 for the first quarter of 1941. Net profit for this period was $349,255.

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is transmitted to the dipper teeth through quiet, efficient, helical cut gears.

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are used at every important bearing point, to conserve power and reduce fuel and lubrication costs.

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is greatly prolonged through the use of special steels, developed for the work the parts are to perform.

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Boom and dipper handle are of welded construction, designed to withstand hardest kind of rock digging.

I NDEPENDENT CLUTCHES
Hoist, travel, swing, raise and lower boom simultaneously. This feature applies to all machines of one yard capacity and larger.

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PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES

Prohibits City Blasting

NILES FIREBRICK CO., Akron, Ohio, has been prohibited by the city council from continuing blasting operations at its silica quarry in the East Ave. district. The company has been quarrying the silica for about 10 years to manufacture refractories.

Concrete Manual

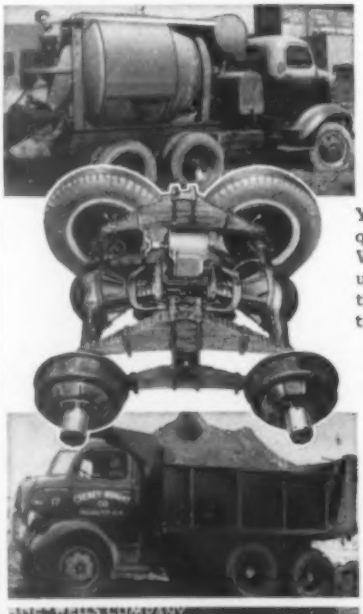
UNITED STATES Department of the Interior, Bureau of Reclamation, has issued a third edition of its popular "Concrete Manual." The book is obtainable from either the Washington or Denver office of the Bureau; checks should be made out to the Treasurer of the United States; the price is $1 per copy.

The preface states that in preparing this new edition, opportunity was taken to make such revisions and extensions as seemed necessary to keep the text abreast of current knowledge and practice. The text has also been considerably rearranged.

We believe this handbook is one of the most useful producers of aggregates and ready-mixed concrete can acquire. About half of the book is on these subjects. The part on handling, placing and curing concrete contains much that aggregate and ready-mixed concrete producers should know, even if that is not part of their service.

Do You Want to Save on *Hauling Costs?*

Here's a sure way to make substantial cost reductions on your hauling. Truck users in more than a score of industries report savings as high as 40% on investment, 30% on operating costs and 35% on upkeep expense.



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YOU SAVE IN EVERY WAY

First cost is far less than that of a conventional truck of equal capacity. Operating and upkeep costs are less. Speed and tractive effort are greater. Six-wheel braking provides greater safety. In fact, from every standpoint you'll save money and do a better job with a Thornton Drive.

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Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL
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Concrete Pavement Yardage

AWARDS of concrete pavement for April, 1941, have been announced by the Portland Cement Association as follows:

	Sq. Yds. awarded during April, 1941
Roads	2,087,202
Streets and Alleys	1,595,940
Airports	1,358,370
Total	5,041,512

Total yards of pavement for the four months ended April, 1941, totals 15,658,461 as compared with 12,663,-061 for the similar period in 1940.

Sand-Lime Brick Production and Shipments

SEVEN active sand-lime block and brick plants reported for April and eleven for March, statistics for which were published in May.

AVERAGE PRICE FOR APRIL

	Plant Price	Delivered Price
Detroit, Mich.	....	$15.00
Grand Rapids, Mich.	....	14.00
Mishawaka, Ind.	$11.00	....
Saginaw, Mich.	11.00	....
Seattle, Wash.	15.00	17.00
Sebewaing, Mich.	10.50	....
Syracuse, N. Y.	14.00	16.00 C/L 20.00 L/C
Watertown, Mass.	12.50	13.50

STATISTICS FOR MARCH AND APRIL

	*March	†April
Production	1,831,200	3,357,868
Shipments (rail)	976,000	476,500
Production (truck)	1,190,621	3,406,111
Stock on Hand	882,919	1,431,805
Unfilled Orders	650,000	1,200,000

*Seven plants reporting: incomplete, three not reporting production, two not reporting stock on hand and four not reporting unfilled orders.

†Nine plants reporting: incomplete, one not reporting stock on hand and six not reporting unfilled orders.

THE PARAGON PLASTER CO., Syracuse, N. Y., reports that they are furnishing 500,000 brick to Garick Construction Co. for work on the Boston Store, Utica, N. Y.

•

J. B. SUNDERLAND, president and manager, Mutual Materials Co., Seattle, Wash., reports as follows: "The immediate future looks rosy. Optimists state that the present activity will continue for at least 4 or 5 years."

•

WINDOM SAND AND GRAVEL CO., Windom, Minn., has completed a new plant for washed aggregates. H. J. Granum, Harow Ostebo and James Thompson are the proprietors.

1941 IS PROVING EAGLE'S LEADERSHIP

During January, February and March of 1941 alone more Eagle equipment was sold than in all of 1940. Add to this the large number of EAGLE machines IN THE FIELD that for years have been giving long and profitable service — and you have the picture of Eagle's true leadership.

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through the greater action of the paddles are extremely effective for breaking down and removing difficult, tough clays and cemented aggregates.

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(shown above). Through action of the travelling chain and cutters, all stoppages are eliminated, and an even, maximum feed to the pump is insured.

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CUTAWAY VIEW of "Slugger" showing heavy duty hammers, liners and discs.

By reducing large rock to 1¼", ¾" or agricultural limestone in one operation, the "Slugger" has enabled operators to produce these sizes at a low cost per ton and with small investment.

Features include—Manganese steel hammers, heavy duty SKF bearings, adjustable breaker plate, hammer adjustments overcome wear, economical to operate.

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OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
PATENT CRUSHERS GRINDERS SHREDDERS

Autoclave Expansion

(Continued from page 48)

dependent of the size of the grains. It decreases as the percentage added increases and is given as "R" in the above table. With grains of the same size the force exerted per grain is constant so that evidently as the strength of the cement increases fissuring will not occur until "R" is decreased, i.e., until a larger percentage of MgO is added.

Results of Tests

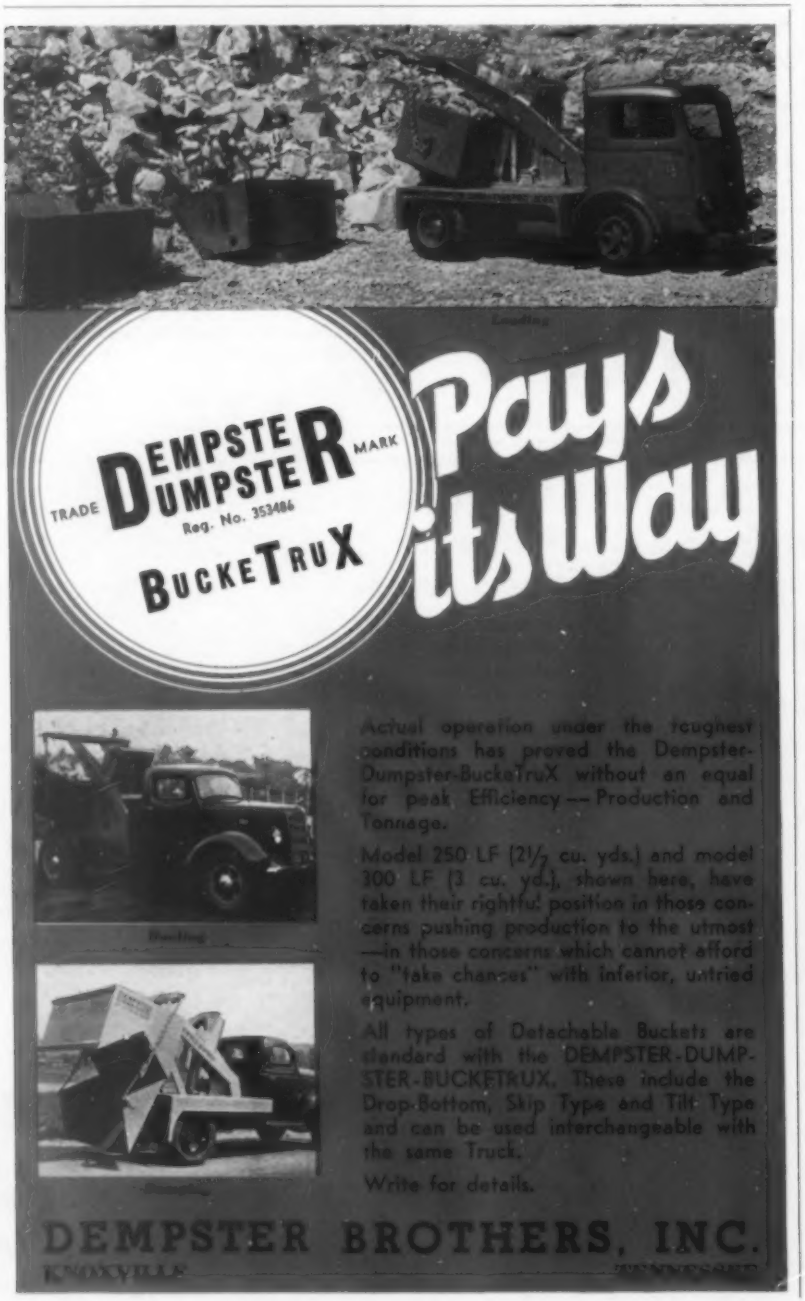
In the case of Cements No. 1 and S.W. this consideration may apply, as the values of "R" are 18.9 and 12.0 requiring strengths in the ratio of 1 to 1.57, which is quite possible. In the case of No. 2 and No. 1 cements the ratio of strengths required is 1 to 1.4 or 70% for No. 2 compared to No. 1. The composition and physical tests of these two cements were practically identical and, in the report of Committee C-1 in 1940, the ratio of the strength of autoclaved to moist cured neat briquettes was over 70% in 207 out of 216 cements having an autoclave expansion 0.5% or less. In practically every case below this, the low ratio of strength was due to an abnormally high strength of the moist cured briquettes, so that it is improbable that the difference in the additions required to produce fissuring can be entirely explained by the relative strength of these cements.

Rate of Hydration Affects Expansion

That some other reason exists for these results becomes evident when the tests on cement No. 1 at different times and pressures are considered. Under the three conditions of tests, 300 lb. for 3 hours, 300 lb. for 1 hour and 200 lb. for 3 hours, the values of "R" are 18.9, 13.6 and 8.4, respectively, requiring strengths in the ratio of 1.0, 1.4 and 2.25, or, if the strength after 200 lb. for 3 hours be taken as 100%, that after 300 lb. for 1 hour is 70%, and that after 300 lb. for 3 hours is 44%. If the strength required of No. 2 is taken into consideration that would also mean that No. 2 after 3 hours at 300 lb. had only 30% of the strength of No. 1 after 3 hours at 200 lb. These figures clearly show that any explanation based on the strength of the cement alone is untenable and that some additional factor must be taken into consideration.

In neither of the above cases can the action be explained by any factor connected with the MgO additions. The grains are identical in size and composition, and would be hydrated in less than one hour at any of the pressures employed if not protected from the steam and it is evident that this protection can only be supplied by the cement itself. In the case of the three cements tested at the same pressures for the same time, the results can be explained to some degree by the relative strengths of the cements, although the difference between No. 2 and No. 1 cements would strongly indicate some additional factor. In the case of the cement tested at different pressures and times, the results cannot be explained by any variation in the strength. Variation in autoclave expansion with times and pressures is shown by all tests including those made on the same cement and, when it is clear that this cannot be explained by any variation in the MgO, the conclusion is inescapable that it is due to a difference in the rate of hydration caused by some quality in the cement.

It should be borne in mind that, in these experiments, the MgO grains were merely mixed with the cement, from which it would appear that the factor delaying the time of hydration is dependent on the set cement itself irrespective of the manner in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which the MgO grains are enclosed, and that the Autoclave Expansion caused by a given content of MgO is not a measure of the form or condition of the MgO but of some attribute of the cement surrounding it. While the nature of this attribute has not been determined, no evidence has been produced to show that it has any effect on the behaviour of the cement in service.

Shoveling Snow in May

COLORADO FUEL & IRON Co., operates a limestone quarry at Salida, Colo. According to a news item, dated May 6, workmen were then shoveling snow out of the quarry and railway tracks, preparatory for the new season's operation. No question of seasonal exemption here; or is there?

Big Order

UNION SAND AND GRAVEL Co., Spokane, Wash., was awarded a $60,000 order for sand and gravel for concrete runways, Sunset flying field. Herbert D. Sullivan, president, is quoted as saying he believes this is the biggest order for sand and gravel ever placed in Spokane.

Nearing Completion

CARRERA PORTLAND CEMENT Co., Carrera, Nev., is said to be making rapid progress on its new 1200-bbl. per day cement plant. It will manufacture both standard portland cement and white portland cement.

Paving Contract

CENTRAL GRAVEL Co., Chicago, Ill., has taken a contract for bituminous resurfacing of State St., Alton, Ill. An asphalt plant has been established on the river front near the sand plant of the Mississippi Lime Co.

Guide to Labor Relations Act

EVERY EMPLOYER who comes under the Federal labor relations law (the so-called wage and hour law) will find a "Handbook of Procedure and Practices" by W. A. Rinckhoff and Harvey B. Rector helpful in understanding its ramifications. The handbook is intended for the employer layman as well as the attorney. It is so written that it is expected to be useful to foremen as well as managers.

There is a chart of so-called unfair labor practices, which by skimming through one can get a fair idea of the law without going into details of the technical language of the law. Then the following chapters tell how the National Labor Relations Board works, the procedure in connection with hearings, etc.; how to keep records, what are bona fide unions, other federal laws which are closely allied with the national labor relations act.

The object of the book is not to give legal advice, but to assist in making one's business as near proof against violations of the law as possible. The price is $7.50 per copy with a supplementary service; additional copies can be obtained for superintendents and foremen for $3.50 each. The publisher is Law Research Service, Cincinnati, Ohio.

Mineral Wool

NATIONAL MINERAL WOOL ASSOCIATION has issued a folder on "Three-Point Landing Necessary for Full Economy"—which translated means attic, window and wall insulation for dwelling houses. The folder consists of chart-tables showing the saving in heat through the use of mineral wool.

New Gravel Plants

HOLLETT Co., Crosby, Minn., has placed in operation a new sand and gravel washing and crushing plant at Boone, Ia., said to be its 32nd such operation. Six sizes of concrete aggregate are made.

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Federal Contract Awards

FOR THE PERIOD from April 28 to May 10, 1941, the Division of Public Contracts, Department of Labor, announces the following contract awards:

Sand and Gravel

Price Brothers Co., Dayton, Ohio, WPA, $15,052.

Moraine Gravel & Sand Co., Dayton, Ohio, WPA, $13,097.

Louisiana Materials Co., New Orleans, La., WPA, $19,380.

Standard Gravel Co., New Orleans, La., WPA, $47,610.

Tiffany Construction Co., Phoenix, Ariz., WPA, $27,332.

Tennessee Valley Sand & Gravel Co., Inc., Sheffield, Ala., WPA, $10,500.

Material Sales Co., Salisbury, N. C., WPA, $33,489.

Cement

Colorado Portland Cement Co., Denver, Colo., WPA, $84,670.

Superior Portland Cement Co., Seattle, Wash., WPA, $107,500.

Spokane Portland Cement Co., Spokane, Wash., WPA, $228,000.

Olympic Portland Cement Co., Ltd., Seattle, Wash., WPA, $127,500.

Vulcanite Portland Cement Co., New York, N. Y., WPA, $13,292.

Alpha Portland Cement Co., Birmingham, Ala., WPA, $11,064.

Keystone Portland Cement Co., Philadelphia, Penn., WPA, $16,500.

Santa Cruz Portland Cement Co., San Francisco, Calif., War, $26,100.

Santa Cruz Portland Cement Co., Portland, Ore., WPA, $27,500.

Portland Cement Co. of Utah, Salt Lake City, Utah, Int. Recl., $37,600.

The Monarch Cement Co., Humboldt, Kans., War, $37,600.

Alpha Portland Cement Co., Easton, Penn., WPA, $63,347.

Southwestern Portland Cement Co., Los Angeles, Calif., WPA, $30,375.

San Miguel & Co., Inc., San Juan, P. R., WPA, $23,250.

O'Rourke Construction Materials Co., Des Moines, Ia., WPA, $25,823.

Superior Portland Cement, Inc., Seattle, Wash., War, $84,800.

Olympic Portland Cement Co., Ltd., Seattle, Wash., War, $80,800.

Crushed Stone

Raleigh Granite Co., Raleigh, N. C. WPA, $12,007.

Oolite Rock Co., Miami, Fla., WPA, $71,400.

South Texas Stone Co., WPA, $14,560.

Daniel E. Colby, Ladonia, N. Y., WPA, $11,900.

Otis Sand & Gravel Co., Stapleton, S. I., N. Y., WPA, $24,208.

T. C. Hubbert & Co., Inc., Wilmington, Del., WPA, $18,010.

Eastside Bldg. Materials Co., Los Angeles, Calif., WPA, indefinite.

Graham Brothers, Inc., Los Angeles, Calif., WPA, indefinite.

Ready Mixed Concrete

M. F. Hickey Co., Inc., Brooklyn, N. Y., WPA., $23,332.

Crystal Concrete Co., South Braintree, Mass., WPA, $27,196.

Ready Mix & Supply Corp., Albany, N. Y., WPA, $55,090.

Harry T. Campbell Sons' Co., Towson, Md., WPA, $10,166.

Basalt Rock Co., Inc., Napa, Calif., Navy, $39,965.

Concrete Pipe

American Concrete & Steel Pipe Co., Los Angeles, Calif., WPA, $79,500.

Gray Concrete Pipe Co., Hagerstown, Md., WPA, $10,554.

Lock Joint Concrete Pipe Co., Denver, Colo., WPA, $31,949.

Bituminous Mixtures

The Lane Construction Corp., Meriden, Conn., WPA, $178,000.

Irving E. Johnson, So. Weymouth, Mass., WPA, $25,465.

Trimount Bituminous Products Co., Everett, Mass., WPA, $13,833.

The Sicilian Asphalt Paving Co., New York, N. Y., WPA, $97,168.

Peter Baker & Son Co., Lake Forest, Ill., WPA, $10,080.

Agricultural Limestone. Indefinite Amounts A.A.A.

The France Stone Co., Middlepoint, Ohio, Logansport, Ind.

The Bluffton Stone Co., Bluffton, Ohio.

Louisville Cement Co., Louisville, Ky.

William Sommers, Amboy, Ind.

Robert McClanahan, Napoleon, Ind.

Material Service Corp., Chicago, Ill.

Farmers Supply Co., Marengo, Ill.

Kingston Quarry, Kingston, Ill.

East St. Louis Stone Co., E. St. Louis, Ill.

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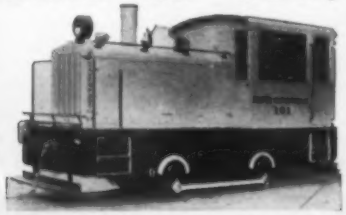

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Columbia Quarry Co., St. Louis, Mo.
Mayville White Lime Works, Mayville, Wisc.
Melvin Koch, Eyota, Minn.
Dzaboff Lime Works, Cascade, Iowa.
Edgar Schmitz, Dubuque, Iowa.
Dubuque Stone Products Co., Dubuque, Iowa.
Leonard Zieser, Walker, Iowa.
Concrete Materials & Cons. Co., Cedar Rapids, Iowa.
M. O. Weaver, Inc., Fayette, Iowa.
Everett Bros. Quarry, Hamilton, Mo.
Independent Gravel Co., Collins, Joplin and Phenix, Mo.
Joe Wenke, Kahoka, Mo.

Kelley Island Report

A GENERALLY OPTIMISTIC VIEW of the company's prospects for 1941 is taken in the annual report of 1940 operations by President Ralph L. Dickey of the Kelley Island Lime & Transport Co. He reports net profits for year ended December 31 last were $319,245, equal to $1.03 a common share, and compares with $338,028 or $1.09 a share the year before. Substantially increased costs for fuel and shipping containers and higher labor rates, without compensating increases in prices, adversely affected earnings, the president's report to stockholders states.

"Sales for first quarter of 1941 were about 10 percent ahead of 1940 period," President Dickey reports. "The near-term future for building construction is good but later defense activities may adversely affect residential construction, which provides the largest market for the company's finishing lime.

"Sales of industrial lime and refractories have been up to plant capacity since the middle of 1940 and provisions for conservatively adding to capacity for these lines are now under way at Buffalo and White Rock plants."

Tonnage of all materials which it is estimated the shipping companies will be called upon to move on the lakes this year, exceeds that of any previous year and Kelley's blast furnace and open hearth flux shipments should exceed 1940 shipments, the report states. Mr. Dickey says the sand department expects a capacity season.

Improvements and additions costing $204,900 were made in plant and equipment at Marblehead and White Rock plants, while operations were discontinued at Huntington, Ind., last December for economic reasons and the Kelley Island plant will not be operated this season. President Dickey says the stone reef near the dock at Kelley Island made it necessary to load only partially the larger type of boats used in recent years.

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MODEL 51
BLAST HOLE DRILL

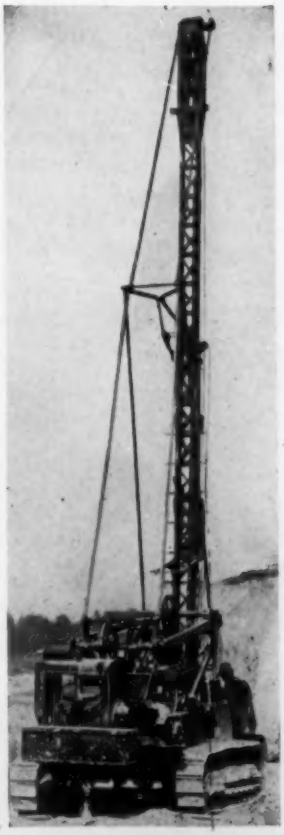
Is a new and better answer to one tough problem of quarry operators and rock cutting contractors.

It is a night-and-day rock fighter with more built-in power, shock endurance and well drilling science than you have ever seen in a well drill up to now.

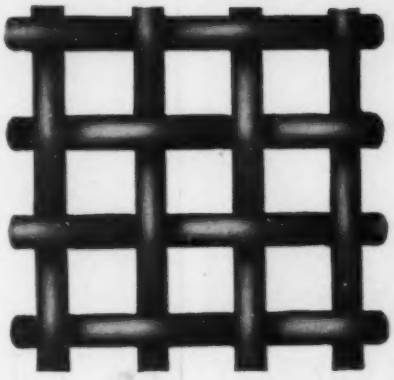
It has a welded and riveted steel frame, bigger shafts and bearings, distinctive tool-guide, power derrick-raiser, mast-head shock absorption, Keystone spudding system and stroke adjustment, dependable traction with convenient independent crawler control for easy steering and many other good features of design.

What makes a good blast hole drill? We print a booklet that tells the answer. It will interest you, make money for you. Ask for it.

KEYSTONE DRILLER CO.
Beaver Falls, Pa.



ROEBLING
ABRASO
SCREEN
TRADE JERSEY



ROEBLING STEEL
Assures Long Life

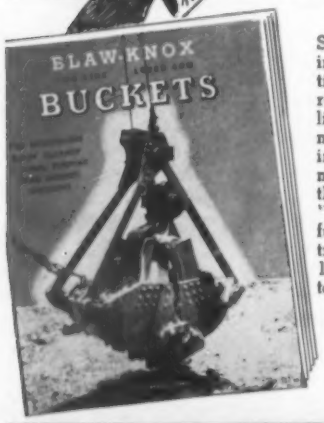
Roebling "Abraso" Screening is made of special steel—manufactured by *custom methods* in Roebling's own mill. It is steel that offers maximum resistance to the BEATING of stone and gravel.

To further assure long screening life, Roebling controls every step of manufacture from steel making to fabrication.

Roebling "Abraso" Screening is available for every sizing, cleaning and grading service.

JOHN A. ROEBLING'S SONS COMPANY TRENTON NEW JERSEY
Branches in Principal Cities | Export Division: 19 Rector St., New York, N.Y., U.S.A. Cable Address: "Roebling's", New York

BLAW-KNOX
BUCKETS have
SEALED
BALL BEARING
SHEAVES



Sealed ball bearing sheaves in the lever arm reduce lost time and expense of bearing replacement, increase cable life and reduce friction, materially improving operating efficiency. This, and many other better features, that make BLAW-KNOX the "wise" buy in buckets are fully explained and illustrated in NEW CATALOG 1757. Send for your copy today.

BLAW-KNOX DIVISION
of Blaw-Knox Company
Farmers Bank Bldg.
Pittsburgh, Pa.

BLAW-KNOX
BUCKETS
BLAW-KNOX BINS AND BATCHERS • ROAD FORMS • STREET FORMS • CONCRETE SPREADERS • TAMPING ROLLERS • VIBRATORS
CONCRETE BUCKETS • CLAMSHELL BUCKETS • TILTER MIXERS • STRIPING MACHINES • TURNTABLES • ROAD FINISHERS • STEEL FORMS

NEW EQUIPMENT means
LOWER COST DIGGING!

Why cling to that old shovel? Why rob your profits to pay repair bills? The exclusive rolled alloy steel construction of P&H excavators means more dependability, greater production—and extra strength to resist the wear and tear of year-after-year operation.

Ask also about P&H's new hydraulic control. It's simpler, more positive and as smooth as steam!

Capacities from ⅜ to 5 cu. yds. Gasoline, Diesel, electric power. Literature available on all models.

General Offices: 4465 W. National Avenue, Milwaukee, Wisconsin.

HARNISCHFEGER
CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

The BROOKS-TAYLOR
Lime Putty Plant

AT
BIRMINGHAM

Hayden Brooks has installed at the plant of the Standard Building Materials Company, of which he is President, a standard Brooks-Taylor unit for producing and handling aged lime putty. It replaces his developmental equipment, which was destroyed by fire. By operating his own plant, Mr. Brooks is able to keep abreast of all developments in the production and use of aged lime putty. Write for data on a standard Brooks-Taylor plant.

CHICAGO BRIDGE & IRON COMPANY

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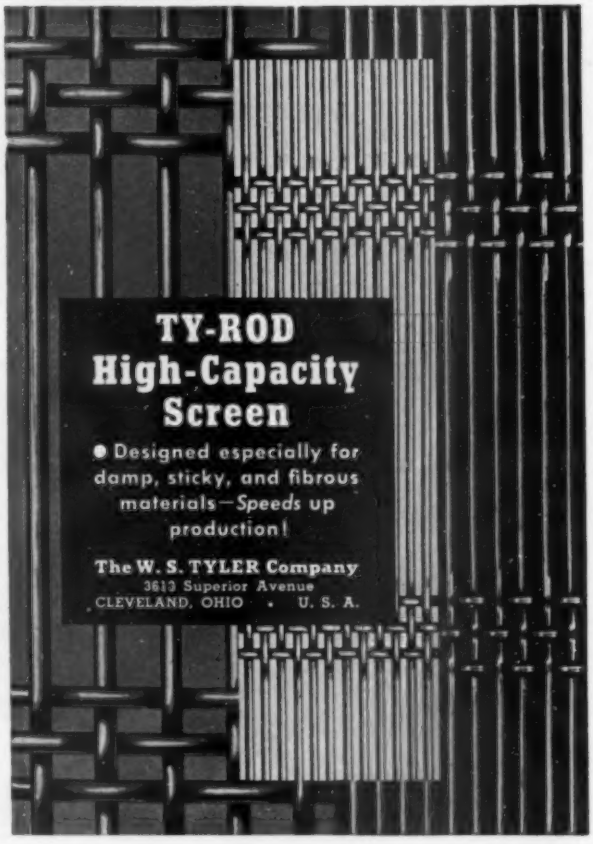
Dallas.....1487 Praetorian Bldg.	San Francisco.....1093 Rialto Bldg.
Birmingham.....1505 N. 50th Street	Los Angeles....1458 Wm. Fox Bldg.



TY-ROD
High-Capacity
Screen

● Designed especially for damp, sticky, and fibrous materials—*Speeds up production!*

The W. S. TYLER Company
3613 Superior Avenue
CLEVELAND, OHIO • U. S. A.

Other Than Portland Cement

HYDRAULIC CEMENTS other than portland cement,—which include natural and slag-lime (so-called puzzolan) cements, and masonry cements of the natural cement class—produced in the United States in 1940, as reported by the Bureau of Mines, U. S. Department of the Interior, amounted to 2,534,566 bbl., which represents an increase of 4.0 percent in comparison with 1939. In 1940 there were shipped from the mills 2,514,597 bbl. of these cements, valued at $3,386,801, an increase of 5.0 percent in quantity and 0.7 percent in gross value as compared with 1939. Stocks at the mills were 8.3 percent higher at the end of 1940 than at the end of 1939. The average factory value per barrel of the product shipped from the mills was $1.35, and $1.40 in 1939.

Natural cement (including masonry cement of the natural-cement class and hydraulic lime) was produced at and shipments were made from 10 plants in 1940. The plants engaged in the manufacture of natural cement in 1940 were located at Utica, Ill.; Speed, Ind.; Fort Scott, Kans.; Mankato, Minn.; Akron and Rosendale, N. Y.; Lisbon, Ohio; and Siegfried, Pa. Two producers (with one plant each, located respectively, at Riverton, Va., and Highcliff, Wis.) reported an output of hydraulic lime in 1940.

Two manufacturers (with one plant each, located respectively, at Birmingham and Graystone, Ala.) reported an output of puzzolan-lime or slag-lime cement in 1940.

Coal to the amount of 42,873 short tons was consumed in 1940 in manufacturing these cements and producers also reported the use of a small quantity of gas having a total fuel value equivalent to about 68 short tons of coal.

In the following table the output has been expressed in terms of 376-lb. bbl. to make them comparable with the statistics of portland cement.

More detailed statistics and information on the cement industries will appear in the Chapter on "Cement" in Minerals Yearbook, 1941. This volume, issued annually by the Bureau of Mines, will be available from the Superintendent of Documents, Government Printing Office, Washington, D. C., August 15.

MASONRY, NATURAL, AND PUZZOLAN (SLAG-LIME) CEMENTS PRODUCED, SHIPPED, AND IN STOCK IN THE UNITED STATES[a] 1936-40.

Year	Active Plants	Production Barrels	Shipments Barrels	Shipments Value	Stocks Dec. 31) Barrels
1936	13	1,819,488	1,760,993	$2,362,396	230,788
1937	12	1,900,643	1,873,400	2,578,885	253,518
1938	12	1,820,795	1,867,949	2,725,776	373,816
1939	12	2,439,110	2,405,135	3,361,724	[b]239,938
1940	12	2,534,566	2,514,597	3,386,801	259,907

[a] Includes hydraulic lime. [b] Revised.

Lime Safety Competition

NATIONAL LIME ASSOCIATION safety contest of 1940, the sixth yearly contest among lime producers conducted by the Bureau of Mines, United States Department of the Interior, in coöperation with the National Lime Association, covered nearly three-quarters of a million man-hours of work at the limekilns and quarries more than was represented by the safety contest of 1939. Enrollment in the 1940 contest represented 43 plants, a gain of two over the preceding year. Five of the 43 plants were enrolled for the first time; 11 of the 43 plants had accident-free records in 1940 and they reflected plant-operation for a period of time equal to 935,113 man-hours.

In accordance with the contest rules, all plants whose records were free of accidents in 1940 were awarded certificates of honor by the National Lime Association. The plants awarded such certificates were as follows:

Cedar Hollow plant, Devault, Chester County, Penn., operated by the Warner Co., operated 317,021 man-hours.

Oranda plant, Strasburg, Shenandoah County, Va., operated by the National Gypsum Co., operated 98,552 man-hours.

Knoxville plant, Knoxville, Knox County, Tenn., operated by The Standard Lime & Stone Co., operated 98,475 man-hours.

Reddick plant, Reddick, Marion County, Fla., operated by the Dixie Lime Products Co., operated 84,861 man-hours.

Dittlinger plant, New Braunfels, Comal County, Tex., operated by the United States Gypsum Co., operated 76,520 man-hours.

Thomaston lime plant, Thomaston, Knox County, Maine, operated by the Lawrence Portland Cement Co., operated 73,574 man-hours.

Thomasville plant, Thomasville, York County, Penn., operated by the J. E. Baker Co., operated 58,036 man-hours.

Marblehead plant, Marblehead, Adams County, Ill., operated by the Marblehead Lime Co., operated 35,475 man-hours.

Newala plant, Newala, Shelby County, Ala., operated by the Newala Lime Works, operated 34,212 man-hours.

Thornton plant, Thornton, Cook County, Ill., operated by the Marblehead Lime Co., operated 31,653 man-hours.

Houston plant, Houston, Harris County, Tex., operated by The Haden Lime Co., operated 26,734 man-hours.

It is to be noted that the Cedar Hollow plant, operated by the Warner Co., had the most outstanding record in 1940 in the group that operated more than 100,000 man-hours. This plant worked 317,021 man-hours without a lost-time injury. In 1939 it also had a perfect safety record, and in the past two years has operated 554,632 man-hours.

In the group that operated less than 100,000 man-hours, the Oranda plant, operated by the National Gypsum Co., had the best record.

Accidents in 1940 were more numerous and severe than in any other year since the contests have been conducted. The combined accident-frequency rate in 1940 was 30.707, and the accident-severity rate was 6.244. The five fatal accidents chargeable with 30,000 days of disability and the six permanent partials chargeable with 7,440 contributed heavily to the high accident-severity rate. If the days of disability from fatalities were not included with the 1939 and 1940 figures, the resulting 1940 accident-severity rate of 1.728 would be more favorable when compared with the resulting 1939 rate of 1.474.

Diatomaceous Earth

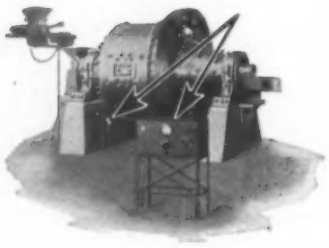
DIA-COUSTI-LITE PRODUCTS CO., Quincy, Wash., is reported to have started its second season's operation with orders for 1500 tons of processed diatomaceous earth. Last year its output was 300 tons. Improvements planned this season include a classifier to remove impurities.

Roofing Granules

H & D SAND CO., Baxter Springs, Kan., has taken over a plant of the Miami Rock Products Co., at Treece, and is producing roofing granules and blasting sand. M. G. Dickson, Baxter Springs, and G. L. Hoffman, Miami, are the proprietors.

THE
"ELECTRIC
EAR"

Controls by sound the operation of ball, tube, pebble mills. Increases capacity 10% to 20%. Keeps fineness steady, simple but impressive in its performance.



HARDINGE
COMPANY, INCORPORATED — YORK, PENNSYLVANIA
NEW YORK, CHICAGO, SAN FRANCISCO, TORONTO

Avoid "BURNOUTS" BY USING PYRASTEEL for high temperatures

Continuous service at 2000° F., with no costly delays for replacing burnt-out kiln parts . . . that's the advantage of using PYRASTEEL for such items, as Feed Spouts, Retainer Rings, Lifter Bars and Liners, shown above. Many other economical uses of this heat and corrosion resisting alloy in your cement mill equipment. Ask for Bulletin.

Chicago Steel Foundry Company
37th Street and Kedzie Ave., Chicago, Ill.
Makers of Alloy Steel for 30 Years

Recent Promotions

J. RUTLEDGE HILL, who has been active head of Gifford-Hill & Co., Dallas, Tex., since the death of his partner, "Pete" Gifford, last winter, has been elected president of the company. He was co-founder of the company with Porter W. Gifford in 1926. Mr. Hill is a past-president of the National Sand and Gravel Association and is active in the Associated General Contractors of America and numerous other engineering and contracting societies. He is a civil engineering graduate of Texas A. & M. and a former highway engineer.

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OSCAR N. LINDAHL, comptroller and secretary, Universal Atlas Cement Co., New York City, has been elected vice-president in charge of finance of the Carnegie-Illinois Steel Corp., subsidiary of the United States Steel Corp. Mr. Lindahl is chairman of the executive committee and a former president of the Comptrollers Institute of America, a member and former director of the National Association of Cost Accountants, a member of the advisory committee and a former president of the Illinois Manufacturers Cost Association and former chairman of the accounting committee of the Portland Cement Association. He was the author of an article written for Rock Products, published July 20, 1929, on "Proper Charges to Fixed Assets" (of cement companies).

Gypsum Sales Boom

CONSUMPTION of gypsum products in the first quarter of 1941, as indicated by sales volumes reported to the Bureau of Mines, increased sharply over the similar period in 1940. Domestic crude production increased markedly in the first quarter of 1941 and, together with the large volume of crude imports, comprised an apparent supply 30 percent greater than in the like period of 1940. Kettle and kiln output of calcined gypsum increased nearly one-third.

Sales to the cement industry for this quarter advanced nearly half again as large as that for the similar quarter of 1940. Lath sales increased 37 percent over the similar 1940 period, and sales of wallboard, which includes sheathing board, were more than double the volume sold in the first quarter of 1940, a gain resulting largely from construction of Army and Navy cantonments.

Crude gypsum mined during the January-March 1941 period totaled 811,500 tons; imported, 175,467 tons. Calcined gypsum amounted to 764,500 tons. Lath production totaled 322,700,000 sq. ft.; wallboard, 209,200,000 sq. ft.; and tile, 7,100,000 sq. ft.

Steel Stock List

JOSEPH T. RYERSON & SON, INC., Chicago, has issued its 1941 stock list. This 268-page booklet lists new products, new analyses, and sizes plus an increased number of helpful charts and tables. It has a handy thumb tab margin index to facilitate reference. The book is published in 10 editions.

Indiana Highway Bids

THE INDIANA HIGHWAY COMMISSION recently advertised for nearly 20,000 tons of crushed stone, gravel, and slag. Bids were opened on May 27. Fourteen road projects were involved.

Batching Plant In Operation

ACME SAND & GRAVEL CO., Spokane, Wash., has announced through F. H. Drollinger, manager, that a new concrete batching plant has been operated by the company near its Hawkeye gravel pit since the first of the year. Equipment and output has been doubled since the plant started operations. Four new high-dump Jaeger mixers mounted on D40 International trucks deliver the ready mixed concrete. Aggregates are obtained from the River pit at 700 East Trent avenue and from the Hawkeye pit purchased last year. This company has been operating in Spokane since 1923. A newspaper report, referred to in the May issue of ROCK PRODUCTS, stated erroneously that the company had been denied a permit to operate this batching plant.

New York Crushed Stone

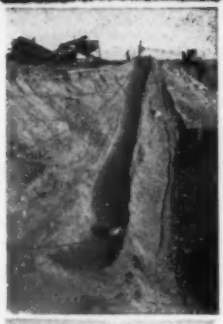
More than 50 members of the New York State Crushed Stone Association held their regular meeting and luncheon at the Governor Clinton Hotel, Kingston, N. Y., on May 7. The luncheon was in honor of Senator Arthur H. Wicks. J. Reid Callanan was toastmaster, and H. E. Coleman, president, presided. Guests included: Otho M. Graves, president of the Eastern Pennsylvania Crushed Stone Association; Mayor Heiselman, County Superintendent of Highways James Loughran, City Engineer James Norton, and the guest of honor.

Oil Burner

ERIE SAND & GRAVEL CORP., Cleveland, Ohio, has converted its bulk carrier *Joseph S. Scobell* from a coal burner to a fuel oil burner. This is said to be the first oil-burner bulk carrier on the Lakes.

SAUERMAN
Long Range
MACHINES

DIG, HAUL and DUMP
in One Operation



Two typical Sauerman installations—a Scraper at work in a dry pit and a Cableway in a wet pit.

THIRTY years of successful service prove that Sauerman Scrapers and Cableways are the best machines in the world for long range material-handling, whether the job is pit or bank excavation, river dredging, moving overburden or stockpiling.

These machines will dig any material that a plough can penetrate. One man controls the entire operation. Power cost and maintenance are exceedingly low per cubic yard of material handled.

A Sauerman machine digs with equal facility under water, on mushy ground, on a hillside or in a rough pit. Operation is continuous—digging, hauling and dumping. Capacities run from 10 to 600 cu. yd. per hour, varying in accordance with size of bucket and length of haul.

Write for Catalog

SAUERMAN BROS., INC.
430 S. Clinton St., Chicago

CUTS COSTS!

Ohio gravel firm separates sand from gravel right at diggings with a LINK-BELT VIBRATING SCREEN

• The Massillon Washed Gravel Co., Navarre, Ohio, has found how to cut costs with a Link-Belt vibrating screen. By setting up a plant right at the diggings with a vibrating screen for separating the sand from the gravel, they have reduced the cost of transporting to the main plant —a mile away—where the gravel is graded. For two years this Link-Belt Screen has been giving great service. Operating 12 hours a day, it handles 100 tons of sand and gravel every hour with practically no maintenance expense. If you have a screening problem—write for complete information on Link-Belt vibrating screens. Ask for Book RP-1792.

LINK-BELT COMPANY
Philadelphia, Chicago, Indianapolis, Atlanta, Dallas, San Francisco, Toronto. Offices and warehouses located in principal cities. 3271

LINK-BELT *Vibrating* **SCREENS**

(Pronounced COLE'-MON-OY)

You can't operate 24 hours a day and stop for many repairs. Use COLMONOY to hard-surface such wearing parts as conveyor screws, pulverizing hammers, gudgeons, clinker plows, crusher teeth, feeder sprockets and all other parts subject to excessive abrasion. Easy to apply. There's a grade for every hard-facing need.

WRITE FOR CATALOG
Full information on the various grades of COLMONOY for every hard surfacing requirement.

WALL-COLMONOY CORP.
Sixth Floor, Buhl Bldg., Detroit, Mich.

558 W. 54th St. NEW YORK
625 W. Jackson Blvd. CHICAGO
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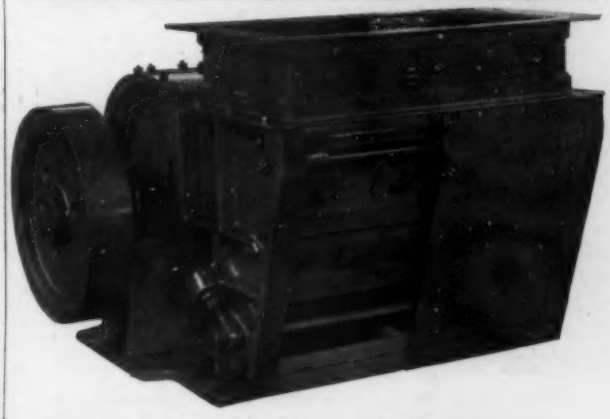
123 W. Philadelphia St. WHITTIER, CALIF.

COLMONOY
Hard Surfacing Alloys and Overlay Metals



American Crushers—
TAKE HARSH DEMANDS IN THEIR STRIDE

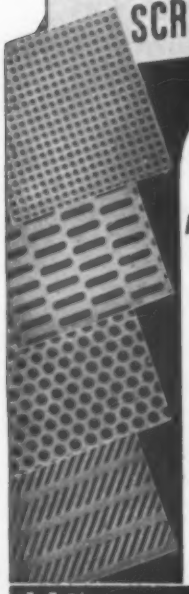
Whether crushing 10 or 100 tons per hour Americans keep right on turning out the same uniform products. You can depend on them for that.

Americans are powerful units, simple in design and sturdily built. They feature SKF Spherical Roller Bearings, Heavy Alloy Steel Shaft, Cast Adjustable Platen, Cast Steel Discs and Manganese Lined Crushing Chamber.

Write for complete details

AMERICAN PULVERIZER CO.
1245 MACKLIND AVE. ST. LOUIS, MO.

PERFORATED Metal SCREENS



Any SIZE
Any SHAPE
Any METAL
Any PERFORATION

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You can safely specify H & K screens and be assured of maximum screening results. Quality both in material and workmanship is always a first consideration.

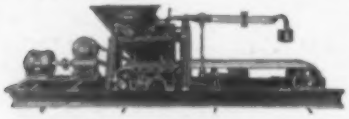
Write for prices.

The Harrington & King PERFORATING Co.

5650 Fillmore St., Chicago—114 Liberty St., N. Y.

A BLENDER
A MIXER

and Unequalled In Its Exactness



The Automatic
Feeder-Weigher-Conveyor

These efficient, accurate, economical weighing and feeding machines have proven their value to operators of cement mills, for accurately proportioning stone and clay —also clinker and gypsum by weight and not by volume.

Also being used for weighing and feeding materials to all types of Grinding Mills.

The Poidometer is self-contained. The scale beam is graduated in pounds or kilos, and can be set at whatever amount of material may be required per foot of belt travel; the gate is then adjusted to suit this weight, and the machine will deliver the pre-determined amount of material with an accuracy of ninety-nine per cent.

Write for Catalog No. 2 and get Complete profit-producing facts!

SCHAFFER POIDOMETER CO.
2828 Smallman St. PITTSBURGH, PA.

Traffic and Transportation

PROPOSED RATE CHANGES—The following are the latest proposed changes in freight rates up to and including the week of May 17:

Southern

25461. **Roofing granules**, C. L., min., 80,000 lb. Establish 286c net ton—Fairmont and Bolivar, Ga., to St. Matthews, Ky.

25462. **Pit Run Gravel**, C. L. Establish 65c net ton. Stephenson, Miss., to Four Mile, Miss. Highway carrier competition.

25474. **Lime**, C. L. Establish to Kenansville, N. C., and points taking same rates from Carey, Ohio, and group 616c, min. 30,000 lb. 493c, min. 50,000 lb.; Cold Springs and Durbin, Ohio, 583c, min. 30,000 lbs., 466c min. 50,000 lb.; Marble Cliff and West Columbus, Ohio, 572c, min. 30,000 lb. and 458c net ton, min. 50,000 lb.

25557. **Stone**, crushed, C. L. Cancel, as obsolete, rate of 75c net ton from Watauga, Tenn., to Spruce Pine, N. C., published in Item 11720, SFTB Tariff 388.

25589. **Mica, dry ground**, C. L. min. 20,000 lb. Establish 85c cwt. Johnson City, Tenn., to Boston, Mass., to alternate with present rate, minimum 60,000 lb.

25604. **Phosphate rock, crude lump or crude ground, and limestone, phosphatic**, C. L. Establish 740c net ton. Mt. Pleasant-Centreville, Tenn. District to Antrim, Mich.

25649. **Lime**, C. L. rates to St. Marys, Ga., from all points of origin from which rates are now published to Kingsland, Ga., named in S. F. T. B. Tariff 382-B, on basis of Southern Trunk Line Scale, for short workable distances.

25637. Cancel, as obsolete, various rates on **crushed limestone, crushed stone, rubble stone, sand and gravel**, C. L., published in Sou. Ry. Washington Division Eastbound Tariff, I. C. C. A-10867.

Texas-Louisiana

5742. **Lime**. Establish rate of 11c per 100 lb. on lime, C. L. min. wt. 80,000 lb., to alternate with present rates, from Dittlinger, McNeil and Round Rock to Dallas and Ft. Worth, Tex.

Illinois

IRC 8439-10 **Sand**, except industrial, in closed equipment, C. L., Essex, Ill., to Hoopeston, Ill. Present class: proposed, $1.15 net ton.

IRC 8439-11. **Sand**, except industrial, in open top equipment. C. L., Essex, Ill., to Elwood (Ordnance Plant), Ill. Present, 97c net ton; proposed, 50c net ton.

39791 (a) **Sand** (other than industrial), and **gravel**, in open top cars, without tarpaulin or other protective covering; (b) **sand and gravel** (other than industrial), in closed cars or in open top cars with tarpaulin or other protective covering, C. L., and **sand**, naturally bonded moulding in open top or closed cars, C. L.; (c) **sand**, industrial, C. L., (see Note 3), from Toms River group, viz.: Farmingdale, Lakewood, Pinewald, South Lakewood, Toms River, Whitings, Quail Run, N. J., Vineland group, viz.: Cedar Lake, Cedarville, Dividing Creek, Greenwick, Hayville, Newport, Sheppard's Mills and Winslow Jct., N. J., and Cape May Group, viz.: Bivalve and Maurice-town, N. J., to Burgettstown, Pa. (a) $3.08, (b) $3.08, and (c) $3.39 per net ton in lieu of current commodity rates of (a) $3.19, (b) $3.19, and (c) $3.51 per net ton (see Note 5).

8224-2. **Mineral wool**, plain or saturated (rock or slag wool), min. wt. 40,000 lb., DeKalb, Ill., to Chicago, Ill. Present, 18, min. 24,000 lb. Proposed, 12, min. 40,000 lb.

9300. **Sand**, industrial, filter. C. L. To establish rate of $1.43 per net ton from Wyanet, Ill., to Bloomington, Ill.

Central

66738. **Limestone**, crude in open top cars, C. L. min. wt. (see Note 3), actual wt. will apply. Establish on, from Lewisburg, O., to Osborn, O. ,77c per net ton, via N. Y. C. (C) direct.

66739. **Stone, fluxing, furnace or foundry**, melting or refractory (unburned) in bulk, in open top cars, C. L. (see Note 3). Establish on, from Lewisburg, O., to Youngstown, O., 144c per gross ton.

66742. **Limestone, agricultural**, unburnt (not ground or pulverized), in open top cars, C. L. Establish on, from Martin, O., to Beloit, Garfield and Moultrie, O., 149c per net ton, via N. Y. C. (W), Cleveland, O., P. R. R.

66747. (a) **Limestone**, agricultural, unburnt (not ground or pulverized), in bulk, in open top cars, C. L. (see Note 3). (b) **Limestone, agricultural**, unburnt (not ground or pulverized), in box cars, C. L., min. wt. 50,000 lb. Establish on, from Martin and Marblehead, O., to Powhatan, O., (e) 160c and (b) 198c per net ton via N. Y. C. (W), Cleveland, O., P. R. R.

66748. **Sand and gravel**, regardless of description. Cancel all rates, ex-lake or otherwise, on, from Toledo, O., to destinations in C. F. A. territory, except to pts. in the state of Ohio, classification basis to apply.

66779. **Sand** (except industrial), and **gravel**, in open top cars, C. L. (see Note 3) will apply. Establish on, from Wolcottville, Ind., to South Whitley, Ind.,

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

WHY
you should specify
SIMPLICITY SCREENS

Years of operating experience in many hundreds of plants and in many industries have been utilized to produce a screen which contains all these important features: Large Capacity, Positive Action, Durable Construction, Perfect Balance, Freedom from Blinding and Rubber Cushioned Power.

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Our engineers will gladly study your particular screening problem and make a definite recommendation for its most practical solution.

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ALLIGATOR
for *Extra* belt lacing hours

One of our lunch hour statisticians estimates that two hundred million belts have been laced with Alligator steel belt lacing since its introduction thirty years ago.

If these belts could all tell their story of performance it would be summed up in "*extra* belt lacing hours."

Since the original patent expired there have been many lacings that looked like Alligator. But fortunately for Alligator the making of belt lacing is a highly specialized job. Years of research, backed by thousands of dynamometer tests plus better alloy steels and the constant improvement in die making and stamping practice, have been responsible for these *extra* belt lacing hours.

Every plant should have a supply of Alligator steel belt lacing on hand. Twelve sizes for flat belts of all types up to 5/8" thick. Special lengths for wide belts. Also made in "Monel" and "Everdur." Order from your supply house.

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● Here is a 72-page pocket size manual, "Short Cuts to Power Transmission," that presents a wealth of practical information about transmission and conveyor belts. Offers pointers on how to care for belts, methods of lacing, how to repair conveyor belts, etc.

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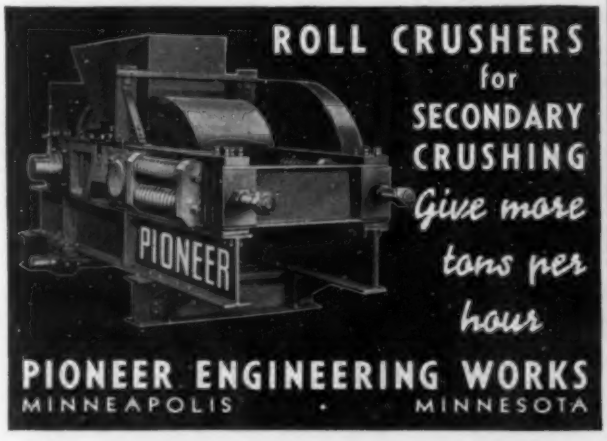

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Give more tons per hour

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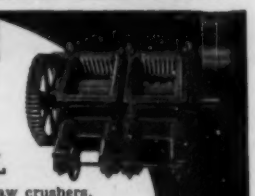

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61c per net ton, via P. R. R. direct, to expire Dec. 20, 1941.

66867. **Crushed stone,** in bulk, in open top cars; **sand** (except industrial), and **gravel,** in open top cars, C. L. Establish on, from Greencastle, Ind., to Knightsville, Ind., on crushed stone and to Reelsville, Ind., on sand and gravel, 30c via P. R. R.

39816. **Sand** (except industrial), and **gravel,** in open top cars, without tarpaulin or other protective covering, or in closed equipment (see Note 2), in closed equipment 60,000 lb., from Cleveland, N. Y., to Swissvale, Wilmerding, Trafford, and East Pittsburgh, Penn., $3.08 per net ton, in lieu of current 6th class rates. Reason: Comparable with rates from and to other points.

39817. **Limestone, crude or pulverized,** C. L. min. wt. 60,000 lb., from Florence and West Rutland, Vt., to points in C. F. A. territory subject to base point grouping in Agent Curlett's Tariff I. C. C. No. A330, viz.: Chicago, Ill., St. Louis, Mo., Westfield, N. Y., Akron, Cleveland, Newark, Youngstown, O., Economy, Penn., Milwaukee, Wis., etc., based on I. C. C. Docket 25220, plus New England arbitrary of 30c per net ton and Ex Parte 123 increase, rates via differential routes to be based on usual differentials under. Reason: Comparable with rates to other points.

39822. (shippers) **Feldspar, crude or ground,** C. L., min. wt. 60,000 lb., from Broadalbin, N. Y., to Buffalo, N. Y., 20; Corning, N. Y., 18; Elmira, N. Y., 18; Ford City, Penn., 26; LeRoy, N. Y., 18; Matewan, N. J., 19; Olean, N. Y., 20; Schenectady, N. Y., 10; Syracuse, N. Y., 15; Trenton, N. J., 19; Victor, N. Y., 17; Wellsboro, Penn., 20; Wheeling, W. Va., 27; Barberton, O., 26; Bedford, O., 24; East Liverpool, O., 27; Sebring, O., 26; Zanesville, O., 28, being rates in cents per 100 lb. in lieu of current class 21 rates. Reason: Comparable with rates from and to other points.

IRC 6535-5. **Silica sand,** C. L. (in open top equipment), (see Note 3), but orders will not be accepted for open top cars of less marked capacity than 80,000 lb., Joliet, Ill., to Milwaukee, Wis. Present, $1.38 per ton. Proposed, $1.00 per ton.

66880. (2) **Stone, fluxing, furnace,** or **foundry, melting** or **refractory** (unburned), in bulk, in open top cars, C. L., (see Note 3), and **dolomite sludge,** C. L., (a) Establish on stone, fluxing, etc., as described above, from Narlo, O., to Painesville, O., 105c per gross ton. (b) Establish on dolomite sludge, as shown in bold face above, from Painesville, O., to Narlo, O., 130c per net ton.

66978 **Stone, fluxing, furnace** or **foundry,** melting or refractory, unburnt in bulk, in open top cars, C. L. Establish on, from Cleveland, O. (ex-lake) to Midland, Penn., 116c per gross ton.

66995. **Gravel,** in closed equipment, C. L., C. F. A. L. Tariff 575A, publishing rates on industrial sand, C. L., from Phalanx, O., to points in T. L. A. and N. E. F. A. territories, by changing Description A. which now reads: Sand, naturally bonded moulding, in all kinds of equipment. C. L.; sand (except industrial) in closed equipment, C. L., by including *gravel, in closed equipment, carloads.

* Applicable only from Phalanx, O., in connection with rates named in Items 300 to 472, incl.

67002. **Crushed stone, stone screenings;** in bulk in open top cars, straight or mixed carloads. Establish on, from Milltown, and Marengo, Ind., to Jeffersonville, Ind., 70c per net ton.

67024. **Stone, crushed; crushed stone screenings** (other than ground or pulverized agricultural limestone, ground or pulverized limestone, fluxing stone or raw dolomite, firestone and silica rock or silica stone), C. L. Establish on, from Huntington, Ind., to Shipshewana, Ind., 116c per net ton.

67025. **Stone, crushed** (in bulk) and **crushed stone screenings** (in bulk), in open top cars, C. L. Establish on, to Osborn, O., from Careu, O., 116c; from Marion, O., 105c per net ton.

Route: From Carey, O., via C. & O. Ry., Marion, O., and Erie R. R.; C. & O. Ry. Delaware, O., and N. Y. C. (C) R. R.

Route: From Marion, O., via C. & O. Ry., Delaware, O., and N. Y. C. (C) R. R.

67026. (2) **Stone, crushed,** in bulk, in open top cars, and **screenings, crushed stone,** in bulk, in open top cars, C. L. Establish on, to Erie, Penn., from Genoa, Martin, O., 154c and Marblehead, O., 143c per net ton.

Route: From Genoa and Martin, O., via N. Y. C. R. R. (W) direct.

Route: From Marblehead, O., via L. & M. Ry., Danbury, O., N. Y. C. R. R. (W).

67027. **Limestone, agricultural,** unburnt (not ground or pulverized), in bulk, in open top cars, C. L. Establish on, from Marblehead, O., to Beloit, Garfield, Moultrie, Kensington, O., 138c; Summitville, O., 149c per net ton.

66968. **Sand** (except industrial) or **gravel,** C. L. Establish on, from Kise, Ky.,to Seaboard, Jewell, Va., 187c; Raven, Graceland, Swords Creek, Drill, Va., 176c; Caledonia, Coeburn and Toms Creek, Va., 165c per net ton, via C. & O. Ry., Elkhorn City, Ky., Clinchfield R. R., St. Paul, Va., N. & W. Ry.

25711. Commodity rates on **phosphate rock and phosphatic limestone,** C. L., min. 60,000 lb., from Mt. Pleasant, Tenn., Group 1, Peytona, Tenn., Group 2, and Mt. Pleasant-Centreville, Tenn., district to points in Southern territory, including Ohio River crossings, to alternate with the present rates subject to min. wt. of 40,000 lb.

25730. **Limestone, ground,** C. L., per ton 2,000 lb.

	From			
To	A	B	C	D
Arkadelphia, Ark. ..	328	306	350	350
Camden, Ark.	328	306	350	350
Little Rock, Ark. ..	295	284	328	328
Pine Bluff, Ark.....	306	284	328	328
Shreveport, La.	328	350	350	361
Texarkana, Ark.-Tex.	350	328	383	383

A—Cartersville, Ga.; B—Sparta, Tenn.; C—Tate, Ga.; D—Whitestone, Ga.

Trunk

M-4353. **Roasted dolomite** (refractory dolomite, in granular form treated or untreated, clinkered or burned to a dead state), C. L., (see Note 3), from Williams, Penn., to Glen Ferris, W. Va., $3.05 per net ton (see Note 5).

Southwestern

24129. **Mica, scrap or waste (Muscovite),** Custer and Keystone, S. D., to Dallas, Fort Worth, Houston, Galveston, Beaumont and Port Arthur, Tex. Establish C. L. rates, min. wt. 60,000 lb. on mica, scrap or waste (Muscovite), crude or ground, from Custer and Keystone, S. D., to Dallas-Ft. Worth, Tex., $6.00 per ton, to Houston-Galveston, Tex., $7.60 per ton, and to Beaumont-Port Arthur, Tex., $7.80 per ton of 2000 lb.

24417. **Silica sand,** Rogers ,Ark., to Birmingham, Ala. To establish rate of 640c per ton of 2,000 lb. on silica sand, powdered or pulverized to such fineness that 90 per cent or more will pass through a No. 100 mesh screen (100 openings to the inch), C. L. from Rogers, Ark., to Birmingham, Ala.

24231. **Feldspar,** Colorado points to Palestine, Tex. Establish on feldspar, C. L., to Palestine, Tex., the following rates ("A" refers min. wt. 50,000 lb. and "B" refers to min. wt. 80,000 lb.): From Canon City (A) $8.47, (B) $7.15; Denver (A) $8.47, (B) $7.15; Echo (A) $8.47, (B) $7.15; Forks Creek (A) $8.47, (B) $7.15; Golden (A) $8.47, (B) $7.15; Roberts Spur (A) $8.47, (B) $7.15; Spike Buck (A) $8.47, (B) $7.15; Texas Creek (A) $8.47, (B) $7.15; Waterton (A) $8.47, (B) $7.15; Boulder (A) $8.47, (B) $7.15;

Black Hawk (A) $8.75, (B) $7.43; Divide (A) $8.75, (B) $7.43; Manitou (A) $8.75, (B) $7.43; Rollinsville (A) $8.75, (B) $7.43; Salida (A) $8.75, (B) $7.43; Tolland (A) $8.75, (B) $7.43; Buena Vista (A) $9.02, (B) $7.70.

New England

39828. Commodity of $4.29 per net ton on **sand, molding (naturally bonded)**, C. L. (see Note 2), from stations on D. & H. R. R., G. & J. Ry., N. Y. C. R. R. (E) and N. Y. C. R. R. (WS), as named in Item 5950 of Agent Curlett's Tariff 23-L, I. C. C. No. A-707 to Chicago, Ill., for C. M. St. P. & P. R. R. delivery. Reason: Same as in effect for other deliveries. To cancel Galewood and Franklin Park, Ill., as destinations on C. M. St. P. & P. R. R. as shown in the above named item as these points are located in the Chicago Switching District.

39835. **Stone, fluxing, furnace** or **foundry, melting** or **refractory** (unburnt), not crushed, in bulk in open top cars, C. L. (see Note 2), from Snow Flake, W. Va., to Ashland, Ky., $1.20 per gross ton in lieu of current 6th class rate of 22c per 100 lb. Reason: Comparable with rates from and to other points.

39852. Commodity rates on **lime, common, hydrated, quick** or **slack**, in bulk or in packages, C. L., min. wt. 30,000 lb. and 50,000 lb. from: Chester Valley group, viz.: Blue Bell, Penn., Bridgeport, Penn., Cedar Hollow, Penn., Cold Point, Penn., Devault, Penn., Rambo, Penn., Shainline, Penn., Exton, Penn., Howellville, Penn., Knickerbocker, Penn., Mill Lane, Penn., Plymouth Meeting, Penn., Swedeland, Penn., and Williams, Penn.

Lebanon Valley group, viz.: Annville, Penn., Avon, Penn., Lebanon, Penn., Myerstown, Penn., Palmyra, Penn., and Swatara, Penn., to all points of destination named in Agent Miller's Southern Line Tariff 382B, I. C. C. No. 582 to which rates are in effect from Riverton, Va., on basis of 66c per net ton over the rates from Riverton, Va.

39854. (shippers) **Roofing granules**, made from shale, including such granules to which coloring pigments have been added during the process of crushing, screening and burning, C. L., min. wt. 50,000 lb. from Watsontown, Penn., to Toronto, Ont., $4.65, Brantford, Hamilton and London, Ont., $4.25 per net ton in lieu of current class rates. Reason: Comparable with rates from other points.

Southwest Unions Meet

UNITED CEMENT, LIME AND GYPSUM WORKERS' INTERNATIONAL UNION, District No. 7 (Southwest) held its first annual convention in Humboldt, Kan., recently. Attending were 25 delegates from the states of Kansas, Oklahoma, Nebraska and Missouri which comprise the seventh district, district and international officers, and a number of cement workers from neighboring cities, several from more distant points. District officers present were Chas. K. Ehrenhardt, Independence, Mo., president; I. R. Wyckoff, Fredonia, Kan., secretary-treasurer; Orval Webber, Dewey, Okla., business representative; R. E. James, district organizer; Reuben Roe, 3rd vice-president, and Tony Gallo, secretary-treasurer.

Resumes Production

ALPHA PORTLAND CEMENT CO., Ironton, Ohio, resumed production the last week in April, after the usual annual shutdown for repairs.

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour — Finenesses: 20 to 350 mesh

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ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
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***Use the* BRADLEY AIR SEPARATOR**

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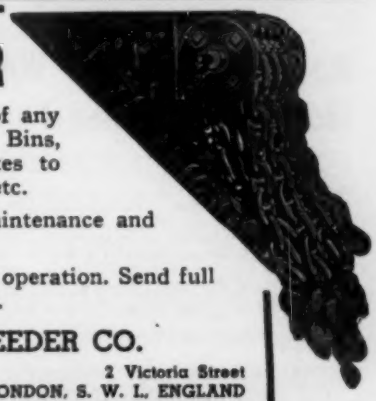

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No Screen Frame Breakage
No Tearing up Screen Cloth along the Sides
No Power Waste
Operates at full capacity and efficiency with 1 H. P. motor
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The Original Deister Co., Est. 1906
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No Other Crusher Will Work for You Like This

DIXIE NON-CLOG Hammermills and Regular Stationary Breakers are unexcelled for primary, secondary or fine reduction. Note the simple, sturdy swing hammer construction and the specially designed, continually moving breaker plate which is an exclusive DIXIE feature. This is an exceptionally powerful and dependable unit for handling cement, rock, clay, shale, silica, sand, gypsum, coal, etc. Made in 40 different sizes.

Write for further details.

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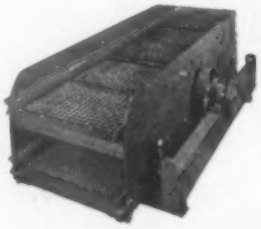


—FAST BECOMING THE ACKNOWLEDGED STANDARD OF VIBRATING SCREENS.

THE PATENTED DESIGN IS EXCLUSIVE AND DIFFERENT.

Screen Equipment Co.
BUFFALO N.Y.

OBITUARIES

EVERETT L. BLOOD, a pioneer of the Florida phosphate industry, died May 5 at his home in Bartow, Fla., aged 81 years. He started as a phosphate executive in Charleston, S. C., in 1886, came to Florida in 1903, and in 1907 moved to Polk county as manager of the Florida Mining Co. He later built and managed the Export Phosphate Co., now known as Southern Phosphate Co. In 1919 he went to New Brunswick, N. J., where he built the Eastern Potash Co. plant. He returned to Bartow in 1925, and had lived there since.

•

ROBERT LUTZ, president of the Lutz Co., Oshkosh, Wis., died May 5 at his home in Oshkosh. He was 74 years old. The crushed stone company of which he was the head operates on quarry property acquired by Mr. Lutz's father 73 years ago. He was prominent in local civic affairs and noted as a lover and breeder of horses.

•

EDWARD GRAHAM, plants superintendent, Graham Bros., Long Beach and Los Angeles, Calif., died recently at his home in Long Beach, aged 59 years.

•

CHARLES B. JAHNKE, president and general manager, Cooper-Bessemer Co., Mount Vernon, Ohio, died recently. He was formerly with Fairbanks, Morse Co.

•

G. B. SEARLES, assistant operating engineer of the Nazareth Cement Co., Nazareth, Penn., died May 5.

•

CHARLES A. FREIBERG, whom old timers will remember as manager of the Buffalo Cement Co., crushed stone producer, Buffalo, N. Y., several years ago, died May 5 at his home in Buffalo. The Buffalo Cement Co. quarry was worked out, and subsequently became the site of a real estate development. Mr. Freiberg was born in Buffalo in 1887. He was prominent in civic affairs, served four terms as a member of the state assembly and two as a member of the state senate. He was elected sheriff of Erie County in 1929 and organized the Judges and Police Executives' Conference of Erie County. He was president of this at the time of his death.

•

EDWARD O. BANKER, general superintendent of the Pennsylvania Glass Sand Co., died recently.

S. D. NANCE, basic slag salesman for many years for the Tennessee Coal and Iron Co., died April 14 at his home in Birmingham, Ala., aged 64 years.

•

WILLIAM MEYER, former partner in the Rockwell Lime Co., Rockwell, Wis., died recently at the age of 83.

PRICES BID
Contracts Let

DES MOINES, IA.: Prices at which the city will buy during this fiscal year; a contract was awarded in one case to each of two firms who made the same bids on building materials, and the department will buy from the one which is nearest any particular project during the year. The tying firms were the Central Iowa Sand and Gravel Co. and the Coon Valley Gravel Co. Their identical offers were, by the cubic yard: $1.05 to $1.82 for concrete mix; $0.63 for filling sand; $1.96 to $2.03 for gravel, and $1.82 for a mixture of sand and gravel. The Keefner Concrete Co. was awarded the contract for washed sand at a price of $1.05 per cu. yd. This company also was low bidder on ready-mixed concrete, which it will furnish at prices between $7.75 and $9.50 per cu. yd. A contract was awarded the Wilson Concrete Co. for smaller reinforced-concrete pipes, at from $0.60 to $1.65 per ft; and the Iowa Concrete Products Co. for larger pipes, at from $2.30 to $3.14 per ft.

•

LA GRANDE, ORE.: La Grande Concrete Pipe Co. was awarded contract for approximately 1100 cu. yd. of gravel and 700 cu. yd. of sand for $2,205, or an average of $1.12.

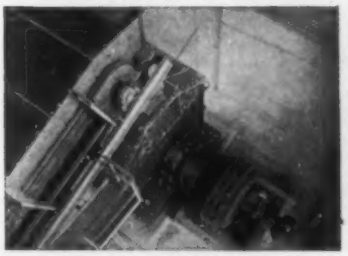
•

DES MOINES, IA.: City awarded contracts for 2000 bbl. of portland cement at $3.28 per bbl. in cloth sacks, $3.08 in paper sacks; 700 bbl. high early strength portland cement, $4.16 in cloth, $3.96 in paper. The three companies were the Keefner Concrete and Material Co., the Leachman Lumber Co., and Perkins Concrete and Lumber Service. All agreed to furnish cement produced in Iowa.

•

HARRISBURG, PENN.: Low bid for paving sand, J. C. Budding Co., $2.18 per ton; crushed stone, Bethlehem Steel Co., Bethlehem, $1.44 per ton; ready-mixed concrete, Pennsylvania Supply Co., $7 per cu. yd.; limestone dust (asphalt filler), J. E. Baker Co., York, Penn., $3.88 per ton in returnable cloth bags; $4.63 in paper.

"PENNSYLVANIA" REVERSIBLE HAMMERMILL



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Major crushing by smashing impact,—Automatic Hammer Turning and Resharpening,—Lower Power Demand,—and Sharply cut upkeep cost.

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LARGE STOCKS... IMMEDIATE SHIPMENT

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

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Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

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EFFICIENT — DEPENDABLE — ECONOMICAL

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Jaw Plates, Gyratory and Roll Crushers, Shovel Teeth, Hammers, Tractor Tread Grousers

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11 to 13½% Manganese Nickel Steel

WELDING ELECTRODES, WEDGE and APPLICATOR BARS, HOT ROLLED PLATES

STULZ-SICKLES CO. *Sole Producers* 134-142 Lafayette St., Newark, N. J.

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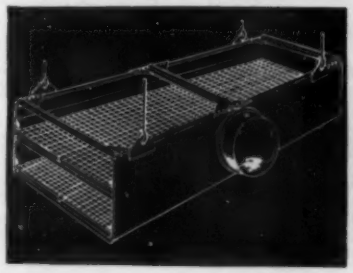

GYROSET

VIBRATING SCREEN

1. Adjustable Stroke
2. Oil Lubricated
3. Full Floating Shaft
4. Sturdy Construction
5. Low Cost—Efficient—Economical

Write for Bulletin No. 939

PRODUCTIVE EQUIPMENT CORP.

2926-2928 West Lake St., Chicago, Illinois

"Nat-Aloy" Uniform Temper Lock Crimp Meshes Assure Accuracy for the Life of Screen

Tough screens that resist abrasion, will not crystallize. Longer life—less replacements. Furnished also in flat top and double crimp meshes. Long slot screens.

Immediate shipments from stock . . . all widths, all meshes . . . Attractive prices.

WRITE FOR NEW CATALOG NO. 55

NATIONAL WIRE CLOTH CO., Inc.
252-270 W. FAIRFIELD AVE. — ST. PAUL, MINN.

WILFLEY centrifugal SAND PUMPS

for Slurries, Sand Tailings, Slimes, Acid Sludges

Save Pumping Costs

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

A. R. WILFLEY & SONS, Inc., Denver, Colo., U. S. A.

NEW YORK OFFICE: 1775 BROADWAY

High Honors

ON THE JOB GO TO
UNIVERSAL VIBRATING SCREENS

Behind the presentation of honors to class leaders are years of consistent and diligent work . . . Universal Vibrating Screens are taking high honors too, and likewise not only because of their structural features, but also because of the long, profitable and dependable service they are giving.

Write today for literature. No obligation whatever.

UNIVERSAL VIBRATING SCREEN CO.
RACINE-WISCONSIN

FARREL
BACON
CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

EARLE C. BACON, Inc.
17 John St., New York, N. Y.

New Incorporations

Virginia Silica Corp., R.F.D. 3, Box 252, Lynchburg, Va., has been incorporated for $25,000 to acquire not more than 5000 acres of land for production of silica, quartz, granite, gravel and other mineral products. R. O. Brannon, Lynchburg, is president.

Shore Block Co., Somers Point, N. J., incorporated for $100,000 to manufacture concrete products. Florence M. Scull, agent.

Naugatuck Concrete Co., Inc., Naugatuck, Conn., ready-mixed concrete, incorporated. President and treasurer, Donald A. Carroll; vice-president, Lewis J. Carroll; secretary, John T. Carroll.

Concrete Forms Corp., New York City, to manufacture concrete blocks, etc.; Geo. M. Freedman, 217 North Ave., New Rochelle, N. Y., agent; 100 shares, no par value.

Paul Sand & Gravel Co., Cleveland, Ohio, incorporated for 250 shares, no par value; Clayton W. Tyler, Grace K. Kundig, Oscar J. Green, agent, Leader Bldg., Cleveland.

Belknap Quarry Co., Belknap, Ill., incorporated for 5000 shares, par value $10 per share; incorporators, J. L. Green, E. F. Green, C. M. Green; correspondent J. A. Gochenour, 1124 Title Guaranty Bldg., St. Louis, Mo. Crushed limestone and other products.

Pike Stone Products Co., Inc., Petersburg, Ind., incorporated for 1000 shares of $20 par value stock; Fred Malott, Edward J. Thompson, Lawrence Julian; agent Edward J. Thompson, Petersburg. Crushed stone and other products.

Concrete Products, Inc., Huntington, W. Va., has been granted a charter with a capital of $25,000. Incorporators are F. W. Gerchow, J. Jay Ross and Edmund R. Wotring.

Manufacturers' News Notes

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced the appointment of Ervin Manske as general traffic manager, succeeding the late Frederick C. Bryan. Mr. Manske started with the company as a stenographer. Carl J. K. Kraus, traffic manager of the Allis-Chalmers' Springfield, Ill., plant has been appointed assistant general traffic manager.

John A. Roebling's Sons Co., Trenton, N. J., has appointed Robert T. Bowman as director of public relations of the company, according to an announcement by Charles G. Williams, executive vice-president and general manager of the company.

Roller-Smith Co., Bethlehem, Penn., has announced the appointment of W. R. Swoish as vice-president in charge of sales and James E. Bevan as vice-president in charge of manufacturing operations.

Ransome Concrete Machinery Co., Dunellen, N. J., has appointed Kern-Limerick, Inc., Little Rock, Ark., as a new agent.

General Electric Co., Schenectady, N. Y., has announced that J. M. Howell, executive assistant to E. D. Spicer, manager of the Schenectady Works, has been named to succeed his chief. Mr. Spicer has been appointed assistant to the vice-president in charge of manufacturing.

B. F. Goodrich Co., Akron, Ohio, advises that J. L. Knight, assistant secretary of the company and head of the legal department, died on May 15.

Morris Machine Works, Baldwinsville, N. Y., has announced the appointment of H. J. Lynch as their new representative in the Detroit district. Mr. Lynch will be located in the Kales Building.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has moved the Toledo, Ohio office to the Toledo Trust building. W. R. Mengel is manager.

R. G. Le Tourneau, Inc., Peoria, Ill., has added Walter L. Schump to its advertising staff. Mr. Schump takes over the duties of former assistant advertising manager, A. Robert Thomson, who has been promoted to the sales department.

Hardinge Co., Inc., York, Penn., reports that President and General Manager, Harlowe Hardinge, has just returned from a trip to Mexico City and vicinity. He reports business conditions improving.

Bucyrus-Erie Co., Milwaukee, Wis., has appointed Dow & Co., Buffalo, N. Y., as distributor for ⅜-cu. yd. to 2½-cu. yd. shovels, draglines, clamshell and lifting cranes, covering northwestern New York territory.

The Cooper-Bessemer Corp., has reported the death of Charles B. Jahnke, president and general manager of the company, who passed away on May 6. His first job was with the Fairbanks, Morse & Co., where he finally rose to the position of director of engineering. In 1931 he joined the International Harvester Co. Four years later he became affiliated with The Cooper-Bessemer Corporation as its chief engineer; in 1937 he was made vice-president and general manager, and on December 27, 1940 was elected president and general manager.

Ransome Concrete Machinrey Co., Dunnellen, N. J., has appointed The San Antonio Machine and Supply Co., San Antonio, Texas, to handle their complete line of contractors' equipment in certain sections of that State.

Cement From Outside State for Ready-Mixed

THROUGH CORRESPONDENCE with the Wage and Hour Division of the U. S. Department of Labor, V. P. Ahearn, executive secretary, National Ready-Mixed Concrete Association, has developed the opinion that merely using cement from another state to make ready-mixed concrete, used locally, does not put the ready-mixed concrete manufacturer in interstate commerce, and hence subject to the Federal Wage and Hour Act. However, the Division did call attention to the fact that those particular employes engaged in purchasing, handling, unpacking, etc., cement from a point outside the state are subject to the law under a previous ruling.

Oklahoma Conference

OKLAHOMA MINERAL INDUSTRIES CONFERENCE was held at Norman, Okla., May 16 and 17. M. O. Matthews, manager of the Oklahoma Portland Cement Co. plant at Ada, spoke on the subject of "Industrial Development of Oklahoma." Moore C. Hess, head of the Concho Sand and Gravel Co., Oklahoma City, Okla., is president of the conference.

BUCKETS READY FOR IMMEDIATE DELIVERY . . .

Speed up your material handling with a new Industrial Brownhoist clamshell bucket. All standard types ready for immediate shipment (photo shows a small part of our large stock). Quantity production plus our manufacturer-direct-to-you sales policy lowers your bucket investment. Write today.

INDUSTRIAL BROWNHOIST BAY CITY, MICHIGAN - DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO

Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

NO TIME LOST—When You Buy CONSOLIDATED Used Machinery

OLIVER FILTERS
4—Oliver Rotary Continuous Filters, 8' x 10', wood stave, closed steel head, steel trough, oscillating agitator, reduction gear drive, no motor, complete with receivers, pumps.

GYRATORY CRUSHERS
36" Allis Chalmers Style "N", short shaft; 42" Gates; 20" Kennedy Gearless; 20" Traylor; 20" Allis-Chalmers Superior McCully; 15" Telsmith; 13" Superior McCully and smaller sizes.

GYRATORY FINISHING CRUSHERS
1'8" and 2'4" Traylor TY; 410-TZ, 4' Traylor; Nos. 19, 25, 37 and 49 Kennedy.

JAW CRUSHERS
30x42" Buchanan Type "C"; 48x42 Traylor Bull-dog; 66x86 Traylor; 48x60 Traylor; 36x24 Farrel; 18x36 Farrel; 24x36 Allis-Chalmers; 8x36 Universal Roll Jaw; 18x30 Allis-Chalmers and smaller sizes.

WHIRLEY CRANE
No. 17 Clyde Whirley with 105' boom, new 1928. Oil fired, enclosed cab. Excellent condition.

ROTARY KILNS
8'x125', 8'x110', 6'x120', 6'x60'.

COMPLETE PLANT FOR FINE PULVERIZING OF SILICA OR OTHER PRODUCTS. MAIN ITEMS CONSIST OF:
4'x20' Indirect Heat Rotary Dryer
6'x32' Hardinge Mill
8' Gayco Centrifugal Classifier
200 H.P. DeLaVergne Diesel Engine
Belt Conveyors, Bucket Elevators, Steel Storage Tanks, Pumps, Air Compressors, etc.

3—6' x 12' ROD MILLS
Hardinge straight side Rod Mills, iron lined, herringbone steel gears, enclosed gear drive units, charge of rods with each mill. Arranged for peripheral or trunnion discharge. In excellent condition and for immediate shipment.

BALL, ROD AND TUBE MILLS
Ball Mills: 3'x5', 5'x10', 6'x6', 6'x8'.
Rod Mills: 4'x8', 6'x12' Hardinge, straight side; 5'x10', 5'x12' Allis-Chalmers.
Tube Mills: 3'x12', 4'x16', 5'x20', 5'x35'.

RAYMOND PULVERIZERS
2, 3 and 4 roll High Side; Nos. 0000, 00, 1 and 3, Beater type—also Nos. 55, 60, 90 Imp type, also No. 40 Imp with 6' Centrifugal Separator.

AIR COMPRESSORS
2—Sullivan Type WN-102, two stage, 550'. New 1939.
2—Ingersoll Rand 90-CH, two stage, air cooled, electric driven, on skids, 360 CFM, 1939.
1—Ingersoll Rand 315-A Portable.
2—Ingersoll Rand 830 cu. ft. air cooled, electric driven 100 lbs. 1939.
1—Chicago Pneumatic OCE 20x12x14; synchronous motor.

CENTRIFUGAL AIR SEPARATORS
10' Sturtevant; 8', 10', 12' Gayco; 6' Raymond; also 5' dia. Raymond "Whizzer" for attachment to roller mill.

HARDINGE CONICAL BALL MILLS
3'8", 5'22", 6'x22", 7'x22", 8'x30", 8'x72".

LIME HYDRATOR
Weber type, made by Arnold & Wiegel with No. 1 Raymond Bros. Lime Separator; also Kritzer.

ROTARY DRIERS—Direct Heat
Ruggles-Coles, double shell: 5'x26', 5'x30', 5'6x60', 80"x45', 104"x60', 104"x85'. Single shell: 4'x30', 5'x30', 6'x40', 6'x50', 6'x60', 8'x60', 8'8"x85'.

CONSOLIDATED PRODUCTS CO., INC.
15-16-17 PARK ROW — *Our Shops at Newark, N. J., cover eight acres.* — NEW YORK, N. Y.

LOCOMOTIVES SHOVELS — CRANES CARS

1—50 ton American Saddle Tank A.S.M.E. Boiler
1—40 ton Porter Saddle Tank, new firebox in 1940
1—32 ton Porter Saddle Tank, rebuilt

15—Modern Covered Hopper Cement Cars

1—17½ ton Brownhoist Steam Loco. Crane, New A.S.M.E. Boiler
1—15 Ton Industrial Steam Loco. Crane, New Tubes, Nat'l Board Boiler

1—1½ Yd. Rehandling Clamshell Bucket, Like New

Birmingham Rail & Locomotive Co.
BIRMINGHAM, ALA.

VIBRATING SCREENS
Fully Reconditioned

4—4'x5' Type 33 Enclosed Hum-mers with or without Generators.
1—40"x66" FB-2 Traylor Single Deck—with Generator.
1—4'x7' Single Deck Traylor Electric Conveyanscreen—with Generator.
1—40"x60" Mitchell Electric.
2—5½'x6' Newaygo, Belt Drive—1, 2, or 3 Screen Surfaces.
1—8'x6½' Newaygo Type K—Belt Drive.
1—4'x6' Newaygo Shaking Screen—Belt Drive.
1—3'3"x10' Double Deck Mechanical Shaking Screen—Belt Drive.
1—3'x3' Impact Screen—Belt Drive.
1—30"x5' Link-Belt—Belt Drive.

Also an Assortment of Trommel Screens

MORSE BROS. MACHINERY CO.
P.O. Box 1708 — Denver, Colorado

Bucket Elevators: Encased-Continuous-Spaced 24"x60', 20"x40', 16"x60', 14"x50', 14"x32' 12"x35', 10"x35', 8"x32', 7"x32', 5"x32'. Chain, Belt, Buckets, Sprockets, Casings.
Railway Equipment:
36" Whitcomb 8-ton, Vulcan 4-ton Locomotives
6—36" Koppel 3-yd. V-type Dump Cars
2—36" Mercury 2-ton Battery Locomotives
12—24" Koppel 1-yd. V-type Dump Cars
5—24" Easton 1¼-yd. V-type Dump Cars
5—24" Koppel ¾-yd. V-type Dump Cars
6—24" Atlas ½-yd. End Dump Cars
24" Portable Track & Switches, 1500'.
Vibrating Screens:
3'x4' 1-deck Leahys — 4'x5' 1-deck Hummers
3'x5' 1-deck Multirap — 4'x6' 2-deck Leahys
3'x5' 1-deck Hummers — 4'x7' 1-deck Hummers
3'x6' 1-deck Leahy — 4'x10' 2-deck Jigger
3'x6' 2-deck Leahy
V-16 & -32 Hummer Vibrator Heads
Crushers:
Jaw—36"x24", 24"x13", 20"x10", 18"x12", 16"x 9", 15"x9", 10"x4"
Gyratory—No. 37 & No. 25 Kennedy & 8" Traylor Roll—54"x20", 42"x16", 36"x16", 24"x24"
8'x54" Bonnett Ball Mill With Air Separator
36"x24" Jeffrey Type B New Hammermill
Pennsylvania Hammermill, 40-hp. Late Type
Ross Chain Crusher Feeder.
Belt Conveyors:
18"x44' & 20"x45' Portable Types
14" to 36" wide Gravity Roller Sections
Feeders—24"x11' & -36"x5' Apron Types
14" to 36" wide Rubber Belt & Cast Pulleys
Gears, Take-Ups, Bearings, Collars, Shafts
Miscellaneous:
⅝-yd. Byers Gas Shovel, with Crane Boom
Clamshell Buckets—½, ¾, 1¾ and 1½-yard
10 Centrifugal Water Pumps, gas & electric
800-hp. Patterson Hot Water Feed Heater
50-ton Blaw-Knox Batching Bin, 2-compart.
Gas Engines, Electric Motors, Gear Reducers

G. A. UNVERZAGT, 15 Park Row, New York City

For Defense

TRUCK MIXERS
ROAD AND AIRPORT EQUIPMENT

Immediate Delivery

1—3 yard Rex separate engine drive mixer 1934 on dual pneumatic A.C. Mack	$2000
1—2 yard Jaeger separate engine drive mixer 1936 on dual pneumatic Ford V8—1937	1950
4—Jaeger Separate Engine Drive Truck Mixers, 190 cubic ft. drum capacity, excellent condition, mounted on dual pneumatic tired G.M.C. Truck	each 2250
1—Jaeger Separate Engine Drive, two yard capacity truck mixer, mounted on a G.M.C. Dual Pneumatic Tired Truck	1750
1—220 ft. C.P.T. Compressor—4 cycle gas engine—mounted on 4 rubber tires serial No. 18686	600.00
5—No. 20 Thor Paving Breakers	each 95.00
5—No. 25 Thor Paving Breakers	each 95.00

ALL IN EXCELLENT CONDITION

2—No. 70 Thor Rock drill	each $110.00
1—Spencer Dust Control 2 gun unit	600.00
8" x 8" Road Forms and 9" x 9" Road Forms	
Jaeger Lakewood Road Finishers—Type G	
Jaeger Lakewood Road Finishers—Type D	
Cleveland Pioneer Trencher	
15 cu. ft. Orange Peel Bucket	
Cletrac Tractor Model A-30	
Jaeger Jiffy Mast	
5 Ton Buffalo Springfield 3 wheel roller	
½ yard Speeder Model O Crane—25' boom on Caterpillars	
Well Point Systems—Service from Coast to Coast	
Other Bargains in Pumps, Building Mixers, etc.	

JAEGER LEMBO MACHINE CORP.

Northern Boulevard at 127th Street, Corona, L. I., N. Y.
Phone Newtown 9-7777

NEW AND USED EQUIPMENT

Immediate Delivery

All used items have been re-conditioned and are guaranteed.

	Condition
1—9" x 16" bronze bearing DIAMOND Jaw crusher complete with flywheels and Model P2877D2 LeRoi motor mounted on trailer unit with steel wheels. (Power: 16-26 HP. 4 Cylinder @ 900-1500 RPM)	New
2—Pitman assemblies with SKF bearings including main bearings for 10" x 20" jaw crusher	New
1—Bucket elevator 32'0" centers, rigid type, with buckets 12" x 6" x 7¾" mounted on belt	New
*3—Pitman assemblies for 10 x 20 jaw crusher, bearings SKF type	Slightly Used
*3—10 x 36 Pitman assemblies for 10 x 36 jaw crusher	Rebuilt
*1—15 x 36 Pitman assembly complete	Rebuilt
1—20'0" bucket elevator with buckets 10" x 6" x 7¾" mounted on chain	Rebuilt
1—30" x 10'0" double shaker screen	Slightly Used
1—Grizzly and hopper 6'8 x 6'8 with 5" sq. opgs. and 20" x 3'0" plate feeder	Good Condition
2—Quarry plants with 10 x 20 anti-friction brg. jaw crushers and folding type bucket elevators size 12 x 6 x 7¾" x 25'0" mounted on trucks with four steel wheels	New
2—30 cubic yard bins, 3 compartment with jack legs	New
6—Steel wheels 40" dia. x 16" face to take 4" Hyatt bearings	New
4—Steel wheels 40" dia. x 10" face to take 4" Hyatt bearings	New
4—Steel wheels 28" dia. x 4" face bore 1⅞"	New
10—Steel wheels 28" dia. x 5" face, bore 1-15/16"	New
8—Steel wheels 24" dia. x 3½" face, bore 1⅞"	New
4—Steel wheels 28" dia. x 14" face, bore 4" Hyatt	New

*The above pitman assemblies can be installed in new bases and sold as complete machines.

POWER UNITS

1—U-40 Allis-Chalmers Gasoline Power Unit @ 36 Cont. HP. @ 1200 RPM	Rebuilt
1—W-25 Allis-Chalmers Gasoline Power Unit @ 25 HP. @ 1300 RPM	Rebuilt
1—Model 300 International Power Unit. Max. HP. 56 @ 1050 RPM	Used

DIAMOND IRON WORKS, INC. AND MAHR MANUFACTURING CO. DIV.
MINNEAPOLIS, MINNESOTA

AIR COMPRESSORS

I.R. Type XCB-2, 870 Cu. Ft.; 5 step control; also 150 HP, 900 RPM; synchronous 2200 volts all complete. Good as new.
I.R. XB-2; 888 cu. ft. PD, and 150 HP slipring motor 900 RPM., all complete. Good operating condition.
I.R. Type XPV-3, steam driven, very economical. 1800 cu. ft. PD. Good condition.
I.R. Type ORC-3, with Cooper Corliss steam cylinders. And plate valves in air cyl. 4338 Cu. Ft. PD., and Wheeler tube type condenser, pump, and air aftercooler. All accessories. Excellent condition. Wonderful machine.
I.R. Type FR-I steam driven, piston type valve, plate air valves. 320 cu. ft. Used 2 years, good condition.
I.R. Type ER-I, 350 cu. ft. PD., plate valves, short belt drive and 50 HP motor 900 rpm. B. C. Type I, Form L. Excellent condition.
Sullivan WJ-3, 1094 Cu. Ft., PD. Plate valves, long leather belt, 150 HP slipring motor, 2200 volts and other equipment, complete. Good condition.

TRAVELING CRANES

3—10 Ton Lane cranes, 50 ft. span, 550 v. 3 ph. 60 cy. Good operating condition.
1—40 Ton crane, Lane, 2 motors, 35 ft. span. 220 v., 3 ph. 60 cy. Excellent condition.
1—Ames Economic fire-box type return tubular, all excellent condition; good for 125 lbs. press. 100 HP capacity.
1 patch Wegner circular shot saw complete with 12 ft. Diam. blade and motors for 550 v., 3 ph., 60 cy.
Many different size motors for 550 v., 3 ph., 60 cy.
1—Slipring motor, 75 HP, 2300 v., 900 RPM. complete.
1—Slipring motor, 75 HP, 2300 v., 1200 RPM.
1—7½ HP motor, 1200 speed, 220 v., 3 ph., 60 cy.
1—Guy derrick and hoist, Oregon pine derrick stick and boom. 80' mast, 70' boom. Heavy castings. 15 tons.
2—Mass. Standard air tanks. 1—12' x 54". 1—16' x 48".
Inspection invited.

WILLIS VENABLE
45 Abbott Ave. Barre, Vermont

CONCRETE PLANTS—EQUIPMENT

Ready-mixed concrete batching plant, 5 compts., 1000 yds. aggregates, 750 bbls. cement, automatic weigh batcher, full electric or manual.
225 tons, 4 compt. bin, weigh batcher.
Butler 100 yd. 3 compt. bin, weigh batcher.
2—115 tons Johnson bins, 2 compt.
Steel bin, 75 yds., single compt., sand and gravel.
Beaumont 42 yd. two compt. bin.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Smith 1 yd. tilting mixer, electric.
Ransome 1 yd. mixer, electric, practically new.
Koehring 27-E paver with boom and bucket.

BUCKETS—STONE SKIPS

2—Steel stone skips, 2 to 3 yds.
1½ yd. heavy duty Blaw Knox digging bucket.
1¾ yd. heavy duty Blaw Knox, digging, clamshell.
1⅜ yd. Hayward rehandling clamshell.
1 yd. Hayward clamshell, rehandling.
¾ yd. Hayss rehandling, clamshell.
1 yd. Hayward orange peel, 4 leaf.
¾ yd. Hayward orange peel, 3 leaf.

SHOVELS—CRANES

2—Marion Diesel shovels, 1—¾ yd. cap.
No. 50 Bucyrus Erie steam shovel, 2 yds. cap.
No. 50-B Bucyrus Erie electric shovel, 2 yds.
Lima 750 1¾ yd. gas crane, 70' boom.
Northwest 1½ yd. gas crane, 60' boom.
Bucyrus Erie electric tunnel shovel, 1 yd. cap.
Northwest 1 yd. comb. shovel-crane, gas.
Brownhoist 10 ton crane, gas, 40 ft. boom.

TRACTORS

RD-8 Caterpillar, with bulldozer.
RD-7 Caterpillar, with bulldozer.
Allis Chalmers Model 35, with bulldozer.
Caterpillar Model 30, with L.P. bulldozer.

LOCOMOTIVES—CARS

2—Vulcan 6 ton, gas, 36" gauge.
2—Whitcomb 4½ ton, gas, standard gauge.
8—2 yd. V type 36" ga. side dump cars.

CRUSHERS—PLANT

Gyratory crushers: K.V.S. 36, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 36x48, 48x60.
Complete portable rock crushing plant, nearly new, with crusher, elevator, screen, etc.

RICHARD P. WALSH CO.
30 CHURCH STREET NEW YORK

FOR SALE

KILNS: 8' x 80', 9' x 142', 9' x 160'
DRYERS: 5' x 35', 5½' x 32', 4' x 40'.
CRUSHING ROLLS: 6" x 5", 24" x 14", 42" x 16"
JAW CRUSHERS: 16" x 24", 10" x 36", 48" x 60"
BALL MILLS: 5' x 8', 6' x 8', 6' x 22'
HARDINGE MILLS: 4½' x 16", 5' x 22", 6' x 22", 8' x 30"
RAYMOND MILLS: Nos. 0000, 00, 1, 1 No. 00 Screen Mill. Also 3, 4 and 5 rolls
HAMMER MILLS: Williams, Gruendler, J. B., etc.

We Purchase Single Items to Complete Plants.

BRILL Equipment Corporation
193 Varick St.
New York City

Bucyrus 50-B 2 yd. electric shovel, on cats, 3-25-440 v. can change cycles, 30' boom.
Bucyrus 80-B high lift (60') steam cat. shovel, 3½ yd. size, with 2½ yd. dipper.
Gas locomotives: 4—Whitcombs 20-ton 36" ga., convertible to 56½" ga.; Plymouth 10-ton & Milwaukee 8-ton gas dinkeys, 24" & 36" ga., overhauled; also 3—Milw. 7 ton gas 36" ga.
Steam locomotive, American 55 ton, std. ga.
Koehring 27E 6-bag paving mixer, overhauled.
Lippmann 42" x 24" roll crusher, Timken brgs.
Allis Chalmers No. 12-K gyratory crusher
Superior-McCully 20" gyratory crusher.
Allis Chalmers-Newhouse 10" & 7" crushers (3).
Fairbanks-Morse Diesel engines, 360 & 550 HP.
Portable crushing & screening plants (2). Cedar Rapids & Wis. Foundry, duplex type, motors, rubber tires, cap. 60 to 90 yds. hr.
Browning 20-ton steam locomotive crane.
Marion steam draglines (2), Models 300 & No. 2.
Clyde 10-ton steel guy derrick, 70' boom, electric hoist, swinger, guys, like new.
Barber-Greene No. 42 bucket loader, A-1.
National Brake 550' electric air compressor.

H. V. SMITH CO., 828 N. B'way. Milwaukee, Wis.

No. 80 Austin Western Portable Crushing and Screening Plant.
36x60" Fairmount Single Roll Crusher.
Austin No. 4 over 2' Symons Cone Crusher.
18x36" Austin-W. 36x24" Farrell Jaw Crushers.
No. 13 McCully & No. 19, 25-S, 37 Kennedy Gyratory.
1 yd. Northwest Gas Crawler Crane, 25' Boom.
2—6x12' Ball Mills, 8ilex Lined, Good.
Shovels, Cranes, Screens, Conveyors, Elevators.
WHAT DO YOU NEED? ASK FOR BULLETINS 51 & 54.

MID-CONTINENT EQUIPMENT CO.
710 Eastgate Pa. 2290 St. Louis, Mo.

NEED DUMP CARS?

FOR SALE 80

20 and 30-yard Capacity—All-Steel—Clark, Koppel and Western—Both Up-turning and Down-turning Door Types
Immediate Delivery!!! All Priced to Move Quickly
Other Types of Cars, Too
ALSO LOCOMOTIVES, CRANES, SHOVELS

IRON & STEEL PRODUCTS, INC.
36 YEARS' EXPERIENCE
13492 S. Brainard Ave., Chicago, Illinois
"Anything containing IRON or STEEL"

FOR SALE

8-b Telsmith primary crusher, high speed shafts and roller bearings. Good condition.
¾ yd. Brownhoist combination crane and shovel.
5 yd. Austin-Western rubber-tired scoop.

COOGAN GRAVEL COMPANY
805-b Lehmann Building, Peoria, Illinois

FOR SALE

1—No. 9 McCully Gyratory Crusher, Manganese fitted, together with sheaves, idler, shafts, bearings and spare parts. Rebuilt for tough going—good working condition.
1—Allis-Chalmers two-roll crusher—Manganese Rolls 54" x 24".

TRAP ROCK COMPANY
1128 Plymouth Building
Minneapolis Minnesota

E.C.A.'s NEW 64 PAGE STOCK LIST

AIR COMPRESSORS
Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

BINS
12—1 150-ton Johnson, 3 comp., 1 150-ton Blaw Knox 2 comp., 1 120-ton Blaw Knox, 4 comp., and the following 2 comp. bins, 2 118-ton Blaw Knox, 1 117-ton Blaw Knox, 1 72-ton Blaw Knox, 1 75-ton Butler, 1 51-ton Blaw Knox, 1 35-ton Blaw Knox, 2 30-ton Johnson. Above with or without weigh batchers.

BUCKETS
26—Clamshell, all sizes and types: Williams, Blaw Knox, and Owen.
6—Dragline: 1—1⅝ yd. Northwest; 1—1½-yd. Omaha; 1—1¼ yd. Page; 2—1 yd. Hayward; 1—⅝ yd. Page
1—1½ yd. Pioneer Cableway Excavator bucket.
7—Dragscraper: 2—1 yd. Sauerman; 1—1 yd. Green; 1—¾ yd. Garst; 2—½ yd. Garst.

CRUSHERS
5—Gyratory crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin; 1—No. 5 Gates; 1—No. 3 McCully; 1—No. 0 McCully.
10—Jaw Crushers: 3—15x36" Universal; 1—15x36" Cedar Rapids; 1—15x26" Champion; 1—12x20" Acme; 2—10x20" Climax No. 2½; 1—9x16" Telsmith No. 9A; 1—9x15" Champion.
1—Set of Allis-Chalmers, smooth type crushing rolls, 42x16".

DREDGE PUMPS
1—12" Morris Heavy Duty D. C. to 100 H.P. dbl. cyl. steam engine.
3—Belt Driven: 2—Morris Mang., 1—10", 1—8", 1—6".

HOISTS
1—2 Yd. Thomas, 2 speed, Class L Cableway excavating hoist with 150 HP electric motor.
1—National 50 HP dragscraper hoist for handling 1 yd. bucket with 50 HP electric or gas power.
1—1 Yd. Cedar Rapids 2 speed dragscraper hoist with 50 HP electric or gas power.
1—1 Yd. Kern variable speed dragscraper hoist powered by 50 HP electric motor.

CRANES, DRAGLINES AND SHOVELS
1—Link-Belt, K-55, ser. No. 1698, 70' boom, 2 yd. bucket, also have a 2 yd. shovel attachment.
1—Link-Belt, K-48, ser. No. 1728, 60' boom, 2 yd. bucket.
1—Northwest Model No. 5, Serial No. 3572, 50' boom with 1½ yd. pull shovel attachment.
1—Link-Belt model K-42, ser. No. 1265, 45' boom, 1¼ yd. bucket, also 1 yd. trench hoe att. or 1¼ yd. shovel front.
1—Northwest model 104, ser. No. 2079, 45' boom, 1¼ yd. bucket; with 1 yd. shovel attachment.
3—Northwest Model No. 4's, Ser. Nos. 3441, 3445, 3493, with 40' boom and 1 yd. pull shovel attachments.
3—Northwest model 105, ser. No. 1645, 1522, 40' boom, 1 yd. bucket.
2—Osgood Heavy Duty, ser. No. 2069 and 2087, 40' boom 1 yd. bucket and with 1 yd. shovel attachment.
1—Thew ⅝ yd. Gasoline Shovel with ⅝ yd. shovel front and 40 ft. crane boom. Serial No. 2901.
2—Koehring Model 301, Ser. 544 and 772, 40' boom, ⅝ yd. bucket.

Send for your copy now

1—Byers Bearcat model 27, ser. No. 5289, 30' boom, ½ cl. sw. ½ yd. bucket.
1—Norberg Butler caterpillar mounted tunnel shovel, air driven, model 110, shop 2168.

CONVEYORS
1—18"x176' Northern stationary belt conveyor, steel frame, motors, belt and catwalk.
10—Portable belt conveyors, gas or electric from 18"x 28' to 24"x32' Barber-Greene, Burch, Northern, Stephens-Adamson and National.
1—18"x12' Barber-Greene, style 51 belt feeder.

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CHICAGO—1119 So. Washtenaw Ave. Phone Nevada 2400
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FOR SALE—INDUSTRIAL LOCOMOTIVES

1 Plymouth 3½ ton, 24" gauge
1 Plymouth 3 ton, 36" gauge
1 Plymouth 4½ ton, 36" gauge
1 Plymouth 7 ton, 36" gauge
1 Plymouth 8 ton, 36" gauge

DUMP CARS

2 yd. Koppel End Dump 36" gauge
Western Grader 2 yd. 24" gauge

NATURAL GAS ENGINES

2 Miller twin cylinders 190 H.P. each friction clutch, line shafting, etc.
1 Bessemer 20 H. P.

INDUSTRIAL SILICA CORPORATION
602 Stambaugh Building
Youngstown, Ohio

Welding Outfits $29.75 to $76.06
Cutting Outfits $49.47
Welding Torches $11.78 up
Cutting Torches $17.93 up

Superior Oxy-Actylene Co.
Dept. W
Hamilton Ohio

FOR SALE

1 Sauerman Dragline Unit complete with 90' mast, 1500' cableway, bucket, electric hoist, fittings, etc., now in operation.

GENERAL MATERIALS COMPANY
P. O. Box 80, Baden, Pa.

FOR SALE

2 sets Telsmith Rolls, purchased in 1937 and 1939. Good condition, some new sprockets. Redesign of plant eliminates use. Cash offers only considered. Inspection at Highspire, Pa.

PENNSYLVANIA SUPPLY COMPANY
10th & Mulberry Sts., Harrisburg, Pa.

FOR SALE

Two Acme Jaw Crushers—10" x 42", Serial Nos. 1837 and 1841, with manganese dye plates, very slightly used and 7 toggle plates as follows: 1 /7"-1/7"-2/7" 1/2"-1/9" 1/2"-1/8", made by the Acme Road Machinery Co., Frandford, N. Y. Cost new .....$3200.00 each
Price f.o.b. cars.....EACH $1500.00

One Traylor, Serial No. 18727, drawing No. 22204 ½, Slugger type, double roll crusher with corrugated rolls 30" x 30", diameter shaft 7½" with two drive pulleys, one of which is 48" in diameter and the other 60" in diameter and both with 12" face. Made by the Traylor Engineering and Mfg. Co., Allentown, Penn. (See page 39, Catalogue No. 5000 for illustration.)
Cost new $3960.00
Price f.o.b. cars.....$1500.00

The above crushers were used less than a week and will guarantee performance equal to new crushers.

By reason of our relocating our plant and installing larger equipment we have also for sale: 1¾ yard P & H Dragline and Clamshell, Model 400, Price $5000.00; 1 complete Machine Shop $5000.00; 1 Traylor 1'8" Type TY force feed reduction crusher — $1250.00; 1 Blake 1020 Jaw Crusher $1250.00; 1 Champion 1226 Jaw Crusher $1500.00; 1 80 H. P. Prim Diesel—$1500.00, and other items.

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Leesburg, Florida

NEW AND USED PIPE FOR EVERY PURPOSE

Large stocks carried everywhere for spot shipment

Jos. Greenspon's Son Pipe Corp.
National Stock Yds. (St. Clair Co.) Ill.

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Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
Fort Wayne, Indiana

EXCELLENT VALUES

15x36 Universal Jaw Crusher.
No. 40 Austin Western Portable Plant.
No. 3 Northwest Gas Crane-Dragline-Shovel.
Whitcomb 12 ton Gas Locomotives, 36" ga.
60-120-180-240 HP Fairbanks Morse Diesels.
120 ton 2 comp. Steel Bins & Batchers.
10 ton McMyler Gasoline Locomotive Crane.
Send for free Bulletin No. 122.

MISSISSIPPI VALLEY EQUIPMENT CO.
515 Locust St. St. Louis, Mo.

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 20" Superior McCully, Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12½x12, 36x16, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 5 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40, Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x30' & 6'x9'. Misc. Tube Mills 2' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller-Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond. No. 22 Pioneer 8x24. 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

ALEXANDER T. McLEOD
7229 Rogers Avenue CHICAGO

2½ yard Beaumont Cable Track Dragline, 80 ft. steel mast. Two speed 150 H.P. motor. Excellent condition.

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FOR SALE

Clamshell Buckets—Blaw Knox—½, ⅝, ¾ and 1 yd.
Dragline buckets—Page 1¼ and 2 yds.
Shovel dipper—1 yd. full manganese.
Locomotive Crane—Browning No. 5, 25-ton, steam, eight wheel, 50 ft. boom.
Gasoline Crawler Crane—Brownhoist, ¾ yd., 40 ft. boom, electric starter.

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2140 Book Bldg. Detroit, Mich.

HYDRATORS

3 Kritzer & Schultiess Hydrators.

AIR COMPRESSORS

BELTED: 355, 528, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1302, 1722 & 2200 Ft.
DIESEL: 603, 807 & 1000 Ft.
PORTABLE GAS: 110,160,220,310,540 & 1200 Ft.
STEAM: 49, 310, 528, 1300, 2200 & 3600 Ft.

CLAMSHELL BUCKETS, SKIPS & GRAPPLES

Owen H. & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1½ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
48 Steel Skips 6½ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.

CRANES AND DRAGLINES

⅝ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

CATERPILLAR SHOVELS

¾ Yd. Lima Diesel.
2 Yd. Marion Steam Shovel.
¾ Yd., 1½ Yd.,2 Yd. & 4 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1½ Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120B Electric. Also 3 yd. Erie Elec.

DUMP CARS

46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.

FLAT CARS

9—50 ton std ga. heavy duty flat cars.

HOISTING ENGINES

Gas: 15, 20, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.

DIESEL UNITS

75, 90, 180, 200 HP F. M. Engines.
110 HP Ingersoll Rand Engine.
175 KVA Worthington 3/60/2200.
278 KVA Fairbanks 3/60/2300.

BALL, ROD AND TUBE MILLS

6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
5'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½ x 3 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.

PULVERIZERS

JEFFERY 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto. Pulverizer No. 6000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft.Chaser M.

STEEL STORAGE TANKS

10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

MATERIAL BIN

116 Ton Blaw Knox 2 Compt.

400 BARREL CEMENT BIN

400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

SEPARATORS AND COLLECTORS

8, 10 and 14 ft. Separators, Gayco & Bradley.

ROLL CRUSHERS

36x20 Fairmount & 26x20 Diamond.

JAW CRUSHERS

10x8, 13x7½, 14x7, 15x9, 15x10, 16x9,16x12,16x10, 16x11, 20x8, 20x6, 20x10, 20x12, 26x12,30x15,30x13, 36x15, 36x30, 36x18, 36x14, 36x9,36x6,36x10,36x24, 42x9, 48x42, 48x36, 60x42, 84x66, 26x16, 9x36.

CONE & GYRATORY CRUSHERS

42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 27 & 49 Kennedy.
18 in.,24 in.,30 in.,36 in. and 49 in. Symons Disc.
4—19 T2 Traylor 4 ft. Gyratory.
6—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch.
8 in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 inch Superior McCullys.

SYNCHRONOUS MOTOR GENERATORS

100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
200 K.W.RIDGWAY 3/60/2200-250-275v.,900 rpm.

SLIP RING MOTORS

52 H. P. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 H.P.GEN.ELEC.3/60/440v.,900-1200 rpm.

CONVEYOR PARTS

BELT: 1000 Ft.60 In.,700 Ft.40 In., 600 Ft.36 In., 800 Ft.30 In., 1642 Ft.24 In.,517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In.,300 Ft.14 In.
IDLERS: 54 In.42 In.,36 In.,30 In.,24 In.,20 In.,18 In.,16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft.24 In.,30 In.&36 In. Sections.

ROTARY DRYERS AND KILNS

36 In.x20 Ft., 3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x 30 Ft.,42 In.x24 Ft.,5 Ft.x30 Ft.,5 Ft.x16 Ft.,5 Ft.x60 Ft.,6 Ft.x60 Ft.,6 Ft.x20 Ft., 6 Ft.x70 Ft.,10x20,7½x100 & 8x110 Ft.Kilns.

STEEL DERRICKS

GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom,25 Ton 100 Ft.Boom,75 Ton 135 Ft.Boom.

LOCOMOTIVES

GASOLINE: 3 Ton,5 Ton,8 Ton,12,14,and 30 Ton.
STEAM: 9 Ton,20 Ton,40 Ton,60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS

VIBRATING: 2x4, 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 6x12, 1, 2 & 3 Deck.
HUMMER, ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16,4x20, 4x22, 4x24, 5x30, 5x20, 6x20.

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Lincoln Bldg., 60 East 42nd Street
New York, N. Y.

BUCKETS

1—4 yd. capacity manganese steel dragline bucket.
1—Sauerman 1 yd. capacity slackline bucket with or without carrier, etc.

BUCKET ELEVATOR

1—All steel on heavy chain bucket 16" wide by 8 x 11¾, 50' centers.

COMPRESSORS

1—Gardner Denver Type ABJ capacity 672' actual air, 2 stage multi cylinder with combination radiator for cooling jacket water and inter-cooling compressed air, V belt drive, 150 H.P. motor all on structural steel base, used six months.
1—Ingersoll Rand Model 75 CH, 2 stage, air cooled, capacity 360' actual air with 75 H.P. motor, direct coupled all on structural base, used 11 months.
1—Sullivan Tandem compound air compressor 1000 cu. ft. steam.

CONVEYORS

2—24" belt conveyors, 225' centers, mechanical parts only.

JAW CRUSHERS

10 x 15 to 56 x 84.

GYRATORY PRIMARY AND REDUCTION CRUSHERS

ALL MAKES AND SIZES.

CRUSHER SPECIALS

1—13 x 30 Buchanan Jaw Crusher.
1—Telsmith 15 x 24 Jaw Crusher.
1—Farrell 24 x 36.
1—Traylor Type TY size 1'8".
1—Superior McCully 30".
1—Kennedy Model 25 gearless.
1—Kennedy Model 19 gearless.
1—Traylor 3' finishing crusher.
1—Set Allis Chalmers 16" x 36" crushing rolls.
1—Set Allis Chalmers 14" x 24" crushing rolls.

DERRICK

1—30 ton capacity guy derrick, 100' mast, 85' boom.

LOCOMOTIVE CRANES—STEAM

1—22 ton, 55' boom, double drums.
1—15 ton, 50' boom, double drums.
1—25 ton, 50' boom, double drums.
1—30 ton, 60' boom, double drums.
All of the above are thoroughly modern with National Board boilers.

CRANES, OVERHEAD—ELECTRIC

1—5 ton capacity, 60' span, 220 volt, 3 motor, cage control.

DIESEL OIL ENGINE

1—450 H.P., 4 cylinder, 4 cycle, solid injection, 225 RPM with or without 300 KW AC 2200 volt generator.

HOISTS

1—Sullivan electric dragscraper or slucing hoist, double drums, 60 H.P., 440-2200 volt AC motor.
1—Sauerman steam slackline or cableway hoist, cylinders 10 x 12.
1—Sauerman double drum dragscraper hoist, electric, 75 H.P., AC, 440 volt.
1—40" dia. x 36" face.
1—72" dia. x 36" face single drum mine type hoist, 150 H.P.
1—78" dia. 72" face, 300 H.P.
1—50" dia. single drum hoist, 100 H.P. motor.
All of the above are AC 2200-440 volt AC motors.

MOTOR GENERATOR SET

1—100 H.P., 440 volt AC to 65 KW 230 volt DC.

KILNS

2—6' and 7' x 100'.

DRYERS

1—6' x 60' single shell.
1—6' x 30'.
1—54" x 40'.

LOCOMOTIVES, STANDARD GAUGE

2—55 ton Vulcan, steam, built 1933, power reverse, air operated fire doors, National Board Boilers, used 11 months for sale or rent.
6—Plymouth and Whitcomb 7, 8, 12 and 14 tons gas locomotives.
1—Vulcan 66 ton 0-6-0 saddle tank, cylinders 18 x 24, National Board boiler.

LOCOMOTIVES, NARROW GAUGE

6—Vulcan and Porter locomotives, 15 to 25 tons, steam, 36" gauge.
6—Plymouth and Whitcomb 5, 7, 12 and 16 tons capacity, 24" and 36" gauge, gas.
6—4 ton storage battery locomotives, 36" gauge. Vulcan, Porter and Heisler 15 to 40 tons, 36" gauge, steam.

PULVERIZERS

2—42" Fuller Mills.
1—Sturtevant No. 1 Ring Roll Mill.
1—Allis Chalmers 3½ x 12 tube mill.

DREDGE PUMP

1—Morris 10" dredge pump, manganese fitted, belt drive.

VIBRATOR SCREENS

2—4 x 10 double deck heavy duty.
1—New Holland, 2 x 6 single deck.
1—Nordberg, 2 x 8, single deck.
1—3 x 8 double deck with motors.

SHOVEL

1—3 yd. capacity full revolving crawler tread shovel, diesel powered.

TANKS

6—10,000 gal. capacity cylindrical horizontal oil storage tanks.

A. J. O'NEILL

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Lansdowne, Pa.
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RUBBER BELTING

TRANSMISSION—CONVEYOR—ELEVATOR

"V" BELTS

FOR

PUMPS—CRUSHERS—PULVERIZERS—ETC.

RUBBER HOSE

FOR

AIR—WATER—STEAM—ETC.

Partial Stock List

NEW AND HEAVY DUTY

Conveyor and Elevator Belting

Quantity	*Width*	*Ply*	*Top Cover*	*Bottom Cover*	*Type*
500 Ft.	48"	8	1/8"	1/16"	Conveyor
505 "	36"	6	1/8"	1/16"	"
856 "	30"	6	1/8"	1/16"	"
520 "	30"	5	1/8"	1/16"	"
180 "	24"	6	1/16"	1/16"	Elevator
2305 "	24"	5	1/8"	1/32"	Conveyor
1298 "	24"	4	1/8"	1/32"	"
250 "	22"	8	1/16"	1/16"	Elevator
1874 "	20"	5	1/8"	1/32"	Conveyor
520 "	20"	4	1/8"	1/32"	"
506 "	18"	6	1/16"	1/16"	Elevator
1765 "	18"	4	1/8"	1/32"	Conveyor
285 "	16"	6	1/16"	1/16"	Elevator
1450 "	16"	4	1/8"	1/32"	Conveyor
516 "	14"	6	1/16"	1/16"	Elevator
509 "	14"	4	1/16"	1/32"	Conveyor
420 "	12"	6	1/16"	1/16"	Elevator
385 "	12"	4	1/16"	1/32"	Conveyor

We will cut any of above rolls. Advise desired lengths and widths and we will promptly quote prices. Many other sizes in stock for immediate shipment.

CARLYLE RUBBER CO., Inc.

62 Park Place — New York, N. Y.

BLOCK MACHINERY

Universal Stripper with Conveyor & Mixer.
5", 8", 10" & 12" Pallets, with corners.
Br. Header Att. for Anchor.
4" and 5" for Anchor & Clark lift truck.
80 Cu. Yd. per hr. Gravel Washing Plant.
2 Vibrating Tables.
1—150 Lb. Cap. per hr. Stoker.
100 Steel Racks.

CITIES FUEL & SUPPLY CO.
6639 W. National Ave. — Milwaukee, Wis.

FOR SALE

1—Anchor semi-automatic tamper in working condition with 4"—8"—12" and header block attachment. 4"—8"—12" steel pallets.

CHICAGO INSULCRETE COMPANY
Franklin Park, Ill.

FOR SALE

ANCHOR Floor Type Tamper and Hobbs, Jr. Block Machine with 800 Pallets.

L. P. KRAUSS, Napoleon, Ohio

Used Equipment for Sale

FOR SALE

2—10" x 36" Farrell Jaw Crushers, Style 22-B. Good condition, priced to sell. Located in New Jersey.

Address Box 997, Care of Rock Products, 309 West Jackson Blvd., Chicago, Ill.

FOR SALE

No. 6 Northwest Crane and Dragline
600 P & H Crane and Dragline
¾ yd. Byers Crane and Dragline
No. 3 Northwest Shovel, Crane and Dragline
12 x 36 Crusher, Conveyors, Screens, Washer
Sand Drag, Water Pump
350' Two stage Air Cooled Motor Driven Compressor

MERTES MACHINERY COMPANY
1622 South First Street, Milwaukee, Wis.

"Electrify Your Crane"

With this 60 H.P. Slip Ring Motor, 900 R.P.M., 3 Ph., 60 Cy., 220-440 V. St. Car Controller, Resistance, Circuit Breaker Conduits, etc., $300.00.

BROADWAY CONST. CO.
14005 Broadway, Cleveland, O.

¼, 1, 1¼ yd. Owen & Williams Buckets
30, 35 HP Gas Hoists
50, 60, 100 HP Elec. Hoists
1¼ Nwest Shovel Attachment
1¼ B-Erie 41B Shovel attachment
1 yd. Page Dragline Bucket
½, ¾, 1¼ Gas Crawler Cranes

J. T. WALSH
Brisbane Bldg. Buffalo, N. Y.

FOR SALE

1—Vulcan Iron Works 7'0" x 55'0" Rotary Dryer in good condition.

Ebsary Gypsum Company, Inc.
Caledonia, N. Y.

ROTARY DRYERS

New and used Rotary Dryers. We specialize on Dryers and Kilns. Send us your inquiries.

McDERMOTT BROS. CO.
ALLENTOWN, PA.

New—RAILS—Relaying

ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

M. K. FRANK

480 Lexington Ave. New York, N. Y.
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NEW RAILS—5000 tons—All Sections—All Sizes.
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WANTED: SUPERINTENDENT FOR Sand and Gravel Plant located in mid-south. Requires experience in dredge operations, diesel and electric powered. Ability to organize work and direct crew in economical 24-hour operation essential. State age, full details of past record, experience, earnings and education. Replies will be held in strict confidence. No consideration to applicants who fail to give full and complete information. Age preference 35 to 45. Write Box 999, care of Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

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PRODUCTION SUPERINTENDENT — Open for position at once. Familiar with the latest equipment and methods used in heavy production as well as small crushing plants, the quarrying to suit conditions and handling of labor and machinery successfully. I have always reduced operating expenses. In both slag and stone crushing. 51 years of age and equal to the severest task. Midwest or Eastern location preferred. Address Box 998, Care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

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POSITION WANTED BY GRADUATE Chemical Engineer with 12 years experience in the Cement Industry. Experience has covered Chemical Process Control, Research, Geological Exploration for Raw Materials, Operation and Production of Special Cements, Concrete Service Work. Address Box 996, Care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

POSITION WANTED — BY EXPERIenced Limestone Sales Representative that is familiar with marketing, production of, and freight rate structure on Crushed Stone, Agricultural and Pulverized Limestone. Address Box 986, Care of Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

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A MOUTHFUL AT EVERY BITE

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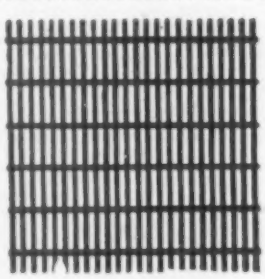

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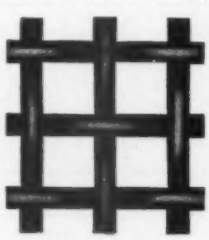

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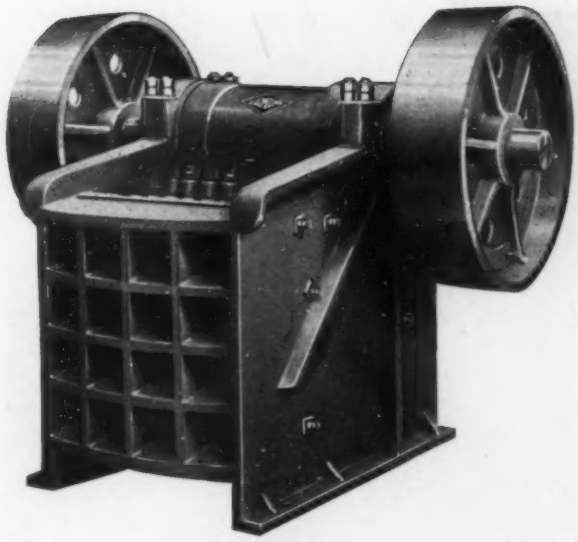

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Will gladly help you work out in the most economical manner any crushing, screening and conveying problems that may confront you. Their skilled service is at your command, and we will welcome your inquiry and give it immediate attention. No obligation, of course.

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ASK for bulletins covering any items of interest. They will be sent promptly. And remember, our engineers will gladly offer their suggestions.

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AND THE MARS MANUFACTURING CO. DIVISION

PAGE BUCKETS BITE RIGHT IN, TOO!

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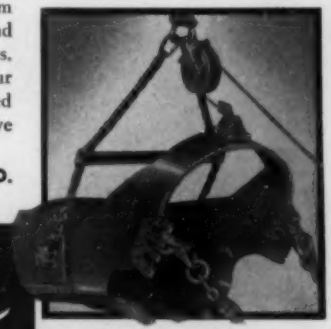
Why? Because the Page Bucket is designed to strike first on its forward arch . . . and then rotate back onto its teeth, using ALL its weight to DIG RIGHT IN. The first pull of the load line sets the teeth—and man, what a bite it takes!

No wonder operators by the score report that their PAGE buckets *outdig any other bucket of equal size and weight.*

It will be money in YOUR pocket to put a Page Bucket to work on YOUR job. They are available in sizes from ⅜ to 15 cubic yards and come in three weight groups. For full details write for our new descriptive bulletin titled "Your Dragline WILL Move Dirt Faster."



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Without obligating me in any way, mail a copy of your new descriptive bulletin titled "Your Dragline WILL Move Dirt Faster."

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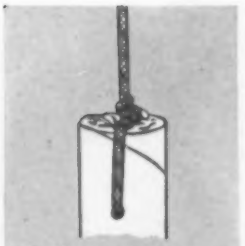
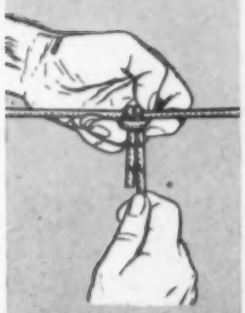
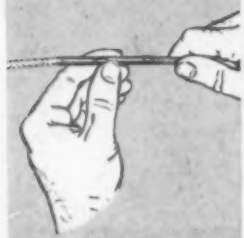


1. Tie through cartridge.



2. Half hitch branch to main line.

3. Connect main line lengths with square knot.



4. Fuse and cap on end of main line.

IMPORTANT

Branch lines should lead away from main lines at *right angles*. Avoid kinks and small loops.

For Better Fragmentation

It's cheaper to break up the stone in the original blast than it is to mud cap later on. Users of Primacord claim better fragmentation because: (1) Primacord, by acting as the detonating agent for each cartridge in the hole, gets more work out of the explosives. (2) While the detonating wave travels at a speed of nearly four miles per second, it is possible to plan the firing of successive holes and rows of holes to permit relief of burden. Send for the Primacord Book.

PB-33

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dig more $ from your pit

with

BUCYRUS ERIE

FIVE-YARD

120-B

1 ACCURATELY CONTROLLED POWER . . . Ample power under perfect control on each motion, hoist, swing and crowd, gives the 120-B a fast cycle. Torques, speeds and weight placement are scientifically balanced for high-speed digging. Responsive control makes it easy to maintain speed for big output throughout the shift.

2 LOW OPERATING COSTS . . . Balanced design blends operating reactions smoothly, resulting in minimum stress on machine. Every part has an ample safety factor, but modern design avoids excess weight and keeps power consumption at a minimum. With the 120-B you have minimum upkeep and minimum lost time because of time-tested design and Bucyrus-Erie quality construction.

3 EFFICIENT DIGGING ACTION . . . Long effective upper boom section, big sheaves and single-part hoist give a wide angle between line of bail pull and line of backward thrust that means maximum effective digging force at the dipper teeth. Power is applied efficiently to the business of digging throughout the 120-B.

4 BIG OPERATING RANGE . . . The 120-B has long range and high lift that make it possible to handle wide cuts efficiently. This means minimum time spent shifting tracks or shovel, and means efficient loading into modern cars or trucks. Moves, digs, and loads on steep grades; easy to get in and out of cuts.

5 FAST FULL SWING . . . Twin vertical swing units, properly balanced, give smooth action, with quick acceleration and deceleration. Full revolving, the 120-B sets oversize rocks aside easily, loads out slides quickly. With ability to load on either side, it is easy to save time by double spotting on truck haul.

6 COMPLETE MOBILITY . . . The 120-B mounting is rugged and flexible. It is a firm foundation for digging and provides for quick move-ups and fast moves from slides. The 120-B can climb stiff grades, dig in or out of a cut in either direction, go anywhere in the pit in a hurry. Ideal for mixing rock or ore; saves by doubling on loading and stripping operations.

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